

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—18TH YEAR.

SYDNEY, SATURDAY, FEBRUARY 14, 1931.

No. 7.

Table of Contents

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES—	PAGE.	ABSTRACTS FROM CURRENT MEDICAL LITERATURE—	PAGE.
"Medical Evidence," by HIS HONOUR JUDGE PERDRIAU	187	Medicine	206
"The Selection of an Anæsthetic," by LEO DOYLE, M.B., M.S.	194	SPECIAL ARTICLES ON DIAGNOSIS—	
REPORTS OF CASES—		The Epilepsies	208
"Congenital Diaphragmatic Hernia in a Young Girl," by P. L. HIPSLEY, M.D., Ch.M., F.C.S.A.	200	BRITISH MEDICAL ASSOCIATION NEWS—	
"Complete Obstructive Jaundice due to Obliteration of the Common Bile Duct in a Child," by R. L. THOROLD GRANT, M.B., M.R.C.P., and L. O. BETTS, M.B., B.S., M.Ch.Orth.	200	Nominations and Elections	211
"Fulminating Frontal Sinusitis and Orbital Cellulitis," by R. E. BUCKINGHAM, M.B., Ch.M., F.R.C.S., D.L.O.	201	MEDICAL PRACTICE—	
"Coronary Thrombosis Associated with Venous Thrombosis," by ARTHUR WATKINS, M.B., B.S.	201	Workers' Compensation Insurance Practice, New South Wales	211
REVIEWS—		OBITUARY—	
Restless Reflections	202	John Leslie Ross Soden	214
Anthropology	202	Frank Walker Raysmith	215
The Potentialities of the Soya Bean	202	Geoffrey Frederick Travers	215
LEADING ARTICLES—		CORRESPONDENCE—	
Clinical Records	203	The War and Sir Neville Howse's Part Therein	215
CURRENT COMMENT—		POST-GRADUATE WORK—	
Harmful Effects of Irradiation	204	Diploma in Public Health	218
		BOOKS RECEIVED	218
		MEDICAL APPOINTMENTS VACANT, ETC.	218
		MEDICAL APPOINTMENTS: IMPORTANT NOTICE	218
		EDITORIAL NOTICES	218

MEDICAL EVIDENCE.¹

By HIS HONOUR JUDGE PERDRIAU,
Chairman of the Workers' Compensation Commission
of New South Wales.

WHEN your esteemed Secretary invited me to spend an hour with the members of your Society, I considered that a short discussion on medical evidence might be of interest.

In practically all jurisdictions medical evidence is from time to time required and the Courts are therefore a point of contact between our respective professions. This is, of course, apart altogether from those cases in which medical practitioners are themselves parties. Starting with legitimacy cases, medical witnesses give evidence in regard to the paternity of infants. Then in the Children's Courts

they frequently are called for various reasons. Then in the Divorce Courts they figure occasionally, as well as in the Criminal Jurisdiction. In the Arbitration Jurisdiction they give evidence in regard to the hours which should be worked in hazardous occupations. In the Workers' Compensation Jurisdiction they give their valuable and contradictory opinions as to the cause of disabling conditions, as well as evidence of facts. And so on through life, to the Coroner's Court, where the medical witness is generally the most important called.

The subject, therefore, seemed appropriate for discussion this evening and I propose mainly to touch upon that phase of evidence which comes under the term "opinion."

Constitution and Jurisdiction.

For the information of those members who have not appeared in the Workers' Compensation Jurisdiction, let me say that the Jurisdiction is a statu-

¹ Read at a meeting of the Medical Sciences Club, Sydney, October 7, 1930.

tory one, the Statute being as recent as July 1, 1926. The *Workers' Compensation Act* provides that the Commission shall consist of a Chairman with legal status and two members; in practice they have been selected to represent the interests of employers and employees.

The Commission has exclusive jurisdiction to examine into, hear and determine all matters and questions arising under the Act, which include many difficult medical as well as legal problems.

The medical profession is represented on the Commission by a medical assessor (usually the Chief Medical Referee) when any case is being heard involving medical issues such as: (i) Whether a particular injury at work could have resulted in the worker's present physical condition or have caused his death, as the case may be; (ii) the existence and degree of incapacity for work by reason of an injury; (iii) the permanence of disablement or degree of diminution of earning capacity of a worker.

The Commission is empowered to appoint medical referees. The Statute debar a medical practitioner who has been employed in connection with any case by or on behalf of an employer or worker or by any insurer interested from acting as a medical referee in that case. Medical boards are constituted by two or more medical referees and the Commission may refer cases to such boards for certificate as to: (i) The condition of the worker, and (ii) his fitness for employment, specifying where necessary the kind of employment for which he is fit. The Act specifically provides that the certificate of a medical board shall be conclusive evidence as to the matters so certified.

In practice the medical board usually furnishes an opinion as to whether the injury could have been received in the manner alleged by the worker. Opinions given by the medical boards on these questions are not binding, but are of great value in promoting settlements between parties, thus avoiding the costly litigation of matters in dispute.

Where there is a permanent loss of efficient use of a member, say, a hand, leg or eye, the medical board assesses the percentage of the permanent loss of efficient use of that injured member. This assessment is for the purpose of fixing a lump sum payable for the physical loss sustained in accordance with the schedule to Section 16 of the Act and bears no relation to the loss of capacity for work (if any) occasioned to the worker (*Horlock v. North Coast S.N. Co.*, 27 S.R., 236); it must not be the board's assessment of the extent of the worker's incapacity for his trade or calling.

Medical certificates are frequently submitted to medical boards and I would call attention to the necessity for practitioners carefully ascertaining and making a note of the facts of an accident before assigning the condition found to such an accident. If the occurrence be mentioned in a medical certificate, be careful to say, "The patient states." By attention to this medical witnesses and experts will

avoid giving written or oral opinions on wrong premises.

In one case a medical practitioner certified a worker to have lifted a heavy weight which on inquiry proved to be only a few pounds.

In another case a man was stated to have moved the stump of a tree which turned out to be a mere sapling. The cause of neuritis of the arms was given as vibration of a mechanical hammer in a milk can factory; on inspection there proved to be no vibration on manipulation of the hammer.

Neuritis in a girl's leg was ascribed to the working of a heavy pedal; investigation showed that the pedal was counter-balanced and could be moved with a minimum of effort.

Evidence in General.

If you will bear with me for a moment I will revive your knowledge of some of the elementary rules of evidence in order to have the particular aspect of the law of evidence with which I purpose to deal, namely, opinion, properly oriented in your minds.

Evidence may be given of facts in issue and facts relevant to facts in issue.

Let me give an example of each. Suppose the fact in issue to be: Did applicant break a phalanx at work? He may give evidence that in pushing a piece of timber into a wood-working machine he slipped and the digit was bent backwards, resulting in the injury. The respondent may tender the evidence of an onlooker that applicant engaged in a street fight on his way home and discontinued because the same phalanx became injured during the contest.

Shortly stated, a fact is relevant to a fact in issue when it can be shown to be one of the causes or effects of a fact in issue. The question being whether A. murdered B.; the fact that a man in the room with the deceased, on seeing a man pass a window, exclaimed when the fatal shot was fired: "There's Butcher!" (the sobriquet of the accused) may be proved as a relevant fact.

Stephen ("Digest of the Law of Evidence," page xiv) says: "Four classes of facts which in common life would usually be regarded as falling within the definition of relevancy are excluded" (subject to certain important exceptions):

A. Facts similar to, but not specially connected with each other, called for short "*Res inter alios acta*."

The question being whether a brewer sold good beer to a publican. The fact that the brewer sold good beer to six other publicans is irrelevant. Lord Ellenborough, C.J., said: "This is *res inter alios acta* (*alteri nocere non debet*). We cannot here inquire into the quality of different beer furnished to different persons. The plaintiff might deal well with one and not with the others." (*Holcombe v. Hewson*, 2 Camp., 391).

In a barber's itch case (*Hales v. Kerr*, 1908, 2 K.B., 601) the plaintiff alleged he contracted the disease owing to the defendant's negligence in using dirty materials. Evidence was allowed to be given by two other customers who had contracted *sycosis barbae* at the same saloon; but only to show that the mode of carrying on the business was dangerous.

B. The second exclusion is hearsay: the fact that a person not called as a witness has asserted the existence of any fact. When Sam Weller said, "May

our acquaintance be a long one, as the soldier said to the £5 note," he was sternly rebuked by the presiding judge, who said: "We don't want to know what the soldier said; that's not evidence!" I shall refer to hearsay again.

C. The character, that is, the reputation, of a person is deemed irrelevant to an inquiry respecting his conduct, but there are innumerable exceptions, for example, in criminal proceedings a good character is deemed relevant, but a bad reputation irrelevant unless it is a fact in issue or evidence of character has been given. Expert witnesses may have their credit shaken by cross-examination in this way.

In the famous Tichborne Trial (R. v. Orton, 1874, Stephen, Dig. 178) a tattooer gave evidence that he made tattoo marks on the arm of Roger Tichborne, the missing heir to the estates, which at the trial were not and never had been on the arm of the claimant who had been a butcher at Wagga Wagga. The tattooer was required to answer in cross examination certain questions regarding his personal conduct with a view to shaking his credit.

D. The fourth exclusion is opinion, our *pièce de résistance* this evening. The existence of a fact cannot be proved by showing that some person is of opinion that the fact exists. But where the fact to be proved is one the existence of which is incapable of being positively asserted or denied, being a question of science or art as to which only persons of special knowledge can speak, such persons may state their opinion on the matter, for example, medical men, analytical chemists, engineers and others. These gentlemen are called "experts." "Expert" has not been concisely defined, but it has been suggested that there are comparative forms of the term, "expert" being the superlative.

A youthful electrical engineer who had just completed his course at a private college, once sought to impress me by stating that his fee as an expert was twenty guineas a day. I felt he was qualified, in one sense at least, as an expert!

Whether or not the proposed witness can be considered an expert is a preliminary question for the judge. In general, the name of the witness appearing on the medical register is deemed sufficient qualification for a medical practitioner to give evidence as an expert. Though the expert must be skilled by special study or experience, the fact that he has not acquired his knowledge professionally goes merely to the weight of evidence and not to its admissibility. (R. v. Silverlock, 1894, 2 Q.B., 766).

Some other non-medical examples may be of interest:

A question arose in one of our courts as to the law in force in a particular part of China and the opinion of a mandarin of the fourth rank was admitted.

A Jurisconsult and Adviser to the Prussian Consul in England who had studied law at the University of Leipzig, was called to prove that the Code Napoleon was in force at Cologne. The Court held he was incompetent because he had derived his knowledge solely from study without actual practice (Bristow v. Sequeville, 19 L.J., Ex. 289).

Mr. Frank Leverrier, K.C., as an Avocat of the Courts of France, has been called to prove and has proved French law.

Handwriting experts generally give an account of the course of study they have pursued to become proficient. Their function was clearly shown in a court martial held at Victoria Barracks during the war, where a soldier had forged names on a pay sheet.

The accused cross-examined the handwriting expert in these terms: "Do you swear that the signatures on the pay sheets and other documents were written by me?" (The other documents contained the soldier's admitted signatures.) The expert replied: "No; all I say is that in my opinion they were all written by the same hand."

It has been said that the modern motor car in its triumphal progress has divided humanity into two great classifications—the quick and the dead. In the process it has provided much interesting and lucrative work for both of our languishing professions. Motor vehicles do not figure as conspicuously in the Workers' Compensation Jurisdiction as they did before the repeal of the provision for compensation to workers for injuries occurring on their daily or other periodic journeys to and from their places of employment. In addition to the medical experts' opinions on the damage done to the humans in such cases, the motor experts are always an interesting study, particularly if one drives and potters around one's own car. These gentlemen's qualifications are very varied, from university degrees to serving a period as bowser boy at a garage. They inform the Court as to the mechanism of the vehicle and the speeds of which, in their opinion, it is capable or incapable. Many judges have commented on the great disparity between the speeds estimated in the witness box with those observed on the roads. One such in a motor bicycle accident case gave me his slogan as "speed is safety." Little wonder need there be at the week-end toll taken by these machines! I have read since that a superintendent of a suburban hospital stated that 80% of the patients suffering from accident treated in his institution resulted from motor bicycles. One of these motor experts stoutly maintained in a country case recently that the only way to test a motor bicycle which had engine trouble was to run it down hill!

Returning to the qualifications of the medical expert, one can give evidence of special courses of study in particular subjects, for example, at universities where special departments are established for the investigation or treatment of a particular disease, or of research made by the witness, or of his having been engaged on a commission that investigated the incidence of a disease such as miner's nystagmus, miner's phthisis, Dupuytren's contraction or lead poisoning.

In a case of "traumatic neurasthenia" the evidence of medical witnesses who had seen the applicant only once had to be weighed against that of others who had had the patient under observation for over a year. The evidence on behalf of one of the parties was to the effect that the best treatment was absolute rest and quiet. The evidence of the other side was that he should be given some form of light employment to occupy his mind and divert his attention from his ailment. Evidence of facts disclosed that the patient, unknown to the first set of experts, had had eighteen months to recover from his injury and had

twice been away to the country for periods of some months in order to obtain the rest and quiet which the first experts prescribed. The patient had a masculine type of wife who conducted him everywhere by the arm and would never permit him to attempt to do anything, thus keeping the memory of his accident constantly in his mind.

The evidence reminded me of one of *Punch's* cartoons, where the unfortunate says: "When I see a job of work—there I'm all of a tremble." You know the couplet regarding the old dogs:

They must be soft in teeth and muscle
Who for bones won't fight and hustle!

Railway spine has been discussed so frequently that I purposely omitted any reference to this complaint, which, as the experts opine, is only curable by a settlement—the larger the amount, the speedier the recovery. Recently I read in a text book a good summing-up of the position. The author stated:

Back injuries have a bad reputation. The workman looks upon them with apprehension, the insurance company with doubt, the medical examiner with suspicion, the lawyer with uncertainty and the Court with as open a mind as is possible under the circumstances.

The author, who is the surgeon in charge of an X ray department in a large British infirmary, refers to the difficulty of raying the fifth lumbar vertebra and quotes a legal friend who commented on the frequency with which injury to this particular bone has been alleged in cases of back injury, and said he had adopted the whist maxim: "When in doubt, play the fifth lumbar vertebra." ("Back Injuries," by A. McKendrick.)

One authority (Phipson, Sixth Edition, page 386) states that the opinions of medical men (under which term unqualified practitioners, hospital students and dressers have occasionally been permitted to testify—Best, s. 516) are admissible upon questions within their province, for example, insanity, causes of death or disease, effects of poisons, consequence of wounds, conditions of gestation, effect of hospitals upon the health of a neighbourhood.

Let me give a few examples of medical opinions from the Workers' Compensation Reports:—

CASE I. A miner, aged sixty-two, had worked consistently for three years before a "blow-out" of coal, when his trunk was partly buried. After the accident he was able to walk about, but within fourteen days was suffering from cardiac distress. He had tertiary syphilis, never worked after the accident and within nine months died in bed from a ruptured aneurysm of the aorta. Eight medical practitioners gave expert evidence and the Commission was assisted in its consideration of the case by having Dr. A. A. Palmer, Government Medical Officer, sit as medical assessor. The question was whether the worker's death was caused or accelerated by the fall of coal.

Expert Number 1 gave it as his opinion that it was quite possible that deceased had the aneurysm before the accident and the effect of the accident was to increase it and make it dissect.

Expert Number 2 thought deceased had not had the aneurysm for any length of time. In his opinion the accident caused the aneurysm. The natural violent effort the worker would make to free himself damaged the lining of a diseased artery, giving rise to an aneurysm which rapidly developed. His opinion was that it was a dissecting aneurysm.

Expert Number 3: The partial burying of deceased would raise internal pressure and this was the cause of the aneurysm. He could not tell whether it was a dissecting or sacculated aneurysm.

Expert Number 4: The accident was of a type likely to raise the worker's intrathoracic pressure and damage one of the contents of the thorax. There was a fair degree of possibility that the accident either aggravated a pre-existing aneurysm or caused one to appear. He could not say whether the aneurysm was dissecting or sacculated.

Expert Number 5: In his opinion deceased had an aneurysm prior to the accident and the heart condition was not aggravated in any way by the accident. Injury to the artery would cause the patient a tremendous amount of distress at the time and he would not be able to get up and walk away. He felt certain it was an ordinary sacculated aneurysm.

Expert Number 6: Deceased suffered from aneurysm before the accident. He did not think it was a dissecting aneurysm. In his opinion the accident had nothing to do with the aneurysm, but if the worker struggled, that would increase the blood pressure and affect an existing aneurysm.

Expert Number 7: The accident did not cause the aneurysm; it had existed for years. He did not attach any importance to the accident.

Expert Number 8: In his opinion the accident was not the cause of the aneurysm and did not accelerate the death. It was sacculated or fusiform.

After due consideration of the experts' opinions, the Commission's finding, with which the medical assessor agreed, was that the evidence established that the "blow-out" aggravated the aneurysm and hastened the worker's death (*Collins v. Sydney Collieries, Ltd.* [1928], W.C.R., 135).

CASE II. A Yugo-Slav, employed as a trucker in a metalliferous mine, complained that some fine dust from a truck fell a short distance on to his face and into his eyes in 1926. He was incapacitated for two months and compensated; then he worked for three months, when he became incapacitated by acute conjunctivitis, iritis and reduced vision, and a compensation award was made in his favour. The Medical Referee recommended specialist's treatment, for which the employer arranged. Later the employer applied for termination of the weekly compensation payment on the ground that the worker had recovered from his accidental injury. The evidence was that the applicant suffered from old-standing trachoma; he did not give truthful answers in certain sight tests; his eyes must have been subjected to irritation; whatever he was suffering from in 1927 was artificially produced; it was not possible for the injury so received to have persisted in the manner alleged; and that the worker was malingering.

The medical practitioner who originally attended the worker considered he had cured his condition in 1926, but could not say that the cure was permanent.

Number 1 Adelaide specialist was of opinion that the applicant had not recovered from the eye condition he had prior to the accident and that his incapacity was due to that cause. To this witness applicant denied having had venereal disease, but stated that during the war he had been in a venereal compound for four months, having, by means of an injection of soap, simulated signs of venereal disease in order to avoid being sent to the front.

Another practitioner who had seen the worker was of opinion that the effects of a foreign body in the eye had disappeared long ago.

Number 2 Adelaide specialist gave evidence that the worker did not give correct answers in a vision test he made. In 1927 his examination disclosed that applicant was suffering from trachoma, which was ten or twelve years old. The effect of getting ore dust in his eye in 1926 would not keep up inflammation until 1927. The accident would only have a temporary effect on the trachoma.

Number 3 Adelaide specialist gave evidence that the worker's answers in the vision test could not possibly be correct. He could see no reason why the worker could not read 100% with both eyes. He explained that con-

conjunctivitis is caused by bacteria and by sealing up the eye the condition is accentuated and a discharge is shown on the bandages. When he sealed up the worker's eye the inflammation subsided and there was no discharge on the dressings. When he left the seal off the worker came back with his eyes inflamed. He could not find out what was the cause of the irritation. He had been on the lookout for soap, gunpowder or cordite.

Number 1 Adelaide specialist, on being recalled, gave further evidence that he saw the worker in 1927, when he considered his condition was grave and that it was a fresh activity of the old condition. He did not place any value on the vision tests. He then stated he believed that the effects of the accident were less important than he had thought (instead of the dust falling a foot or two, he believed it had fallen about the height of a ceiling). In his opinion the lid-sealing tests only proved there was no discharge.

Another practitioner who had seen the worker when in hospital in 1927, gave evidence that an examination of the worker showed he had trachomatous eyelids. The trachoma was of long standing. Dust falling in the eye might possibly start that condition. One of the causes is uncleanly habits. Poorness of vision could be caused by trachoma.

Number 4 Adelaide specialist gave evidence that he examined the worker in 1927. The lower lids of his two eyes were red and swollen, the upper lids were scarred and there were some trachomatous granules present. There were scars on the corneae of both eyes. During the period of treatment there was active trachoma present. As far as witness could see, it was a genuine case of active trachoma. He expressed the opinion that it was possible to determine whether trachoma has been existent in the eye over years as compared with months. He was satisfied that the trachoma the worker was suffering from was of long standing. In 1928 the worker was examined by a medical referee who certified that the granulations present in the left eye were not there at his previous examination in 1927, otherwise his condition was unchanged. He suffered from chronic trachoma with an acute exacerbation.

The Commission found that applicant's incapacity was due to a *novus actus interveniens*, that the old cause which arose out of and in the course of his employment had gone, and that a new one had been substituted for it. The chain of causation having been broken, the award of compensation was terminated ([1928] W.C.R., 141, Banevich v. Zinc Corporation, Ltd.).

CASE III. A marine engineer who suffered from a chronic gastric ulcer with adhesions to his liver, performed wharf labourer's work by shovelling wet, heavy gravel from a chute to the after part of the hold, some fourteen to sixteen feet away. He died of rupture of the ulcer and its sequelae. His widow claimed compensation.

The principal questions for determination in that case were: (i) Did the wharf labouring work which deceased performed on the day in question, admittedly more arduous than that usually performed by him as an engineer, aggravate a preexisting condition and accelerate his death? or (ii) was deceased's death due to the culminating point of a pathological condition operating within the worker being reached while he was at his place of employment, unaffected by any factor in the course of and contributed to by the employment?

Expert Number 1, the honorary surgeon who operated on deceased in a public hospital in Sydney and was the only medical witness who saw deceased, gave evidence that the ulcer was of many months or years' standing, had eroded its way through the layers of the stomach wall, and was adherent to his liver. The stomach was distended, the muscles of the abdomen compressed the stomach, and owing to the gastric ulcer being fixed, the onset of muscular contraction or pressure would tend to break through that weakness in the stomach. The work deceased was doing would, in his opinion, have this tendency, the abdominal muscles being utilized in the twist necessary to do the shovelling work.

Expert Number 2 agreed with the views expressed by Expert Number 1 and stated that he found such work as gardening had aggravated the condition of gastric ulcer.

Expert Number 3 agreed and stated that as deceased was unaccustomed to the work he was doing, the unusual physical exertion would probably cause rupture.

Expert Number 4 was of opinion that deceased's work had no effect at all on his condition. Perforation is caused through some increase in pressure within the stomach sufficient to overcome the weak spot—the gastric ulcer—and perforate it. He cited Boyle's law. In his opinion intragastric pressure was the cause.

Expert Number 5 expressed the opinion that ulcer of the stomach perforates because, as a result of erosion, there is a very weakened part of the stomach wall and the pressure within the stomach rises to an adequate degree. The universally accepted view is that the determining factor in perforation is ingestion of food or drink into the stomach which raises intragastric pressure and causes distension. Violent exertion causes an increase of abdominal pressure, but in his opinion this would not cause sufficient distension to produce perforation. He did not think the work deceased had been doing had anything to do with the perforation of the ulcer.

Expert Number 6 gave evidence that in a great many cases perforation of a chronic gastric ulcer is the result of erosion. Certain factors do influence the ultimate fact of perforation, for example, the peristaltic movements of the stomach after a meal; when necrosis has spread through to the peritoneal covering peristalsis may be the determining factor in the perforation. He doubted if any ulcer would perforate without the main fact of erosion having taken place, except in cases where there was an unexpected, violent injury to the abdominal wall. He did not think the work deceased performed would be a contributing factor to the perforation.

The Commission considered that in view of the brief lapse of time between the performance of the arduous work by the deceased and his complaint of pain to the master of the vessel the two could not be dissociated. It pointed out that it was impossible to demonstrate that the work was the determining factor in the rupture of the ulcer, but after considering the probabilities and weighing the technical opinions expressed by the leading surgeons and physicians called by the respective parties, it was of opinion that the strain involved in the cargo trimming aggravated deceased's preexisting condition and accelerated the rupture of the adherent gastric ulcer which was the event causing his death. Deceased's widow was awarded compensation (Cleary v. Wilson Granite and Gravel Company, Limited [1929], W.C.R., 145).

CASE IV. A mine worker, seventy-two years of age, who had a senile heart and prostatic tumour, met with an injury in the course of his employment which confined him to his bed. Retention of urine developed, from the effects of which he died on October 3, 1926. His dependants claimed compensation from his employer.

The main question for the Commission to determine was whether the urinary retention was a result of the accidental injury. The injury deceased met with was caused by a falling prop which struck his left leg and the lower portion of his abdomen. The prop was five feet six inches long and weighed about twenty to twenty-five pounds.

Deceased's medical adviser gave evidence that deceased rested after the injury and three days later the leg, which had been bruised, was still a bit stiff and sore, but apparently doing all right. Four days later deceased complained of retention of urine, which had occurred the previous day. In an attempt to catheterize the bladder a great amount of difficulty was experienced and a little force had to be used. Some fresh bleeding occurred, but little urine was voided.

He was of opinion that the blow on the leg and abdomen while he had a tumour or enlargement of the prostate gland might have had an effect on the passing of the urine. The doctor's explanation of deceased's condition was that he first got congestion, retention developed and he became worse. When asked why the congestion should come on while the patient was resting in bed, the doctor said: "It is possible that the fact that he had been lying up altered his mode of life, and that may have had something to do with it and, being an old man, was against him." He remarked on the fact that deceased had been an active man.

Medical Witness Number 2 gave evidence that on the day following that on which Witness Number 1 had catheterized the bladder of deceased, he catheterized the bladder and drew off more than a pint of urine. Deceased was suffering a good deal from shock. He was of opinion that the accident mentioned had affected the passing of deceased's urine. The next day another medical practitioner catheterized the bladder of deceased, and he died that evening. Witness stated that the passing of the catheter on a man in deceased's condition would in nearly every case be accompanied by bleeding.

Expert Number 3 was of opinion that in deceased's case the retention of urine was not caused by deceased having to lie up in bed as a consequence of the accident. He admitted that lying up in bed is sometimes the exciting cause.

Experts Numbers 4 and 5 were of opinion that the accident did not contribute to deceased's death.

Expert Number 6 was of opinion that if deceased had sustained the injury described it could have contributed to retention.

Expert Number 7 said: "You would hardly expect such a happening without an injury."

Expert No. 8 was of opinion that with a man in deceased's condition any slight exciting cause may turn the scale.

The Commission found that the lying-up necessitated by the injury sustained was the exciting cause of the retention of the urine from which deceased suffered and which accelerated his death. His dependants were awarded compensation (*Brisbane v. Mount Kembla Collieries, Limited* [1926-1927] W.C.R. 166).

Those examples demonstrate the contradictory nature of expert evidence.

The Expert's Job.

A consultant is usually called upon to give expert evidence and he generally appears in Court after having examined the patient for either the applicant or the respondent. One eminent authority (Knocker, page 298) states that the expert "is in a relatively independent position and can therefore easily divest his mind of bias and approach the case in a judicial spirit . . . This is his duty to his position and to the medical profession." This authority gives it as his view that "before he goes into Court he should, if the opportunity arises, at a joint consultation use his best endeavours to bring the doctors on the two sides into agreement upon a reasonable diagnosis and prognosis capable of forming the basis of a settlement." He further states that "an unattainable ideal would be the drawing up and signing of a statement by the two medical men on the points upon which they agree." Our medical boards go a step further in having the statement made and signed by two independent medical practitioners.

This suggestion, however, is one which I heartily endorse, and in cases which come before the Commission I invite counsel in opening to outline the questions upon which the parties are at issue in order that the members of the Commission may direct their minds to the real matters in dispute instead of wasting their energy upon questions which are thrashed out thoroughly but are relatively unimportant.

Expert witnesses should always bear in mind that, although called by the parties, they appear to assist the tribunal in arriving at a just determination of the matters in dispute—matters upon which they

are specially fitted by their training to express opinions.

The practice before the Commission is to give the expert witness a free rein to express himself fully in his examination-in-chief. He should bring his original notes and subsequent reports, which should be produced if required. He should relate: (i) The symptoms complained of and (ii) the signs he himself observed. He can then give his interpretation of the symptoms and signs in the light of the evidence given of the facts.

Though everyone admits the absolute necessity for accuracy in histories, we frequently find them unreliable in this respect, that the medical historian has not distinguished between his own observations and the hearsay of the patient, his wife, his mother-in-law and the various members of his family. I previously mentioned this when referring to medical certificates.

A doctor's notes may be put in evidence after the doctor's death, if they contain a statement against interest—so be careful to see they are accurate.

The following is an illustration:

The question is whether a person was born on a particular day. An entry in the book of a deceased man, midwife, in these words is deemed to be relevant:

W. Fowden, Junr's Wife.

Filius circa hora 3 post meridian natus.

W. FOWDEN, Junior.

April 22, *filius natus.*

Paid 25 October, 1768.

Wife, £1 10s. 1d.

(*Gleadow v. Atkin*, 1833, 1 Crompt. and M. App. 423.)

In the histories of deceased persons statements of the patient's symptoms are admissible, but those giving the cause of the patient's condition are inadmissible.

In an old case (*Amys v. Barton*, 5 B.W.C.C., 117) the question was whether a man had died from the sting of a wasp. The County Court Judge admitted a statement by a medical witness that "deceased told him he was threshing wheat and must have disturbed a wasp's nest, as wasps were about and one stung him, that he sat down, unlaced his buskin and took a dead wasp off his stocking."

The Court of Appeal, England, ruled that the statement was inadmissible: Statements made by a deceased man as to his bodily or mental feelings are admissible, but those made by the deceased man to his doctor as to the cause of the injury are inadmissible.

In a more recent case (*Sharp v. Loddington*, 17 B.W.C.C., 171) deceased was a steam navy fireman and part of his duty was to clean a hurricane lamp. He started work at 6.30 a.m. and at breakfast showed a fellow worker a nick in the skin of a finger which had been cleaned, the rest of the hand being very dirty and oily. Thereupon the fellow worker went and looked at the lamp and found part of the glass broken with a sharp edge. The fireman died of septic poisoning. A doctor called by the widow said in cross-examination: "I asked deceased how he got cut and he told me he had cut himself on his bicycle lamp." The County Court Judge ruled that the doctor's statement was inadmissible, held that the worker died from injury arising out of and in the course of his employment, and awarded compensation on the fellow worker's evidence. The Court of Appeal, England, upheld the award and ruled that the doctor's evidence as to the cause of the injury was irrelevant.

After examination-in-chief the witness undergoes cross-examination to test the soundness of the opinions he expresses. Endeavours are frequently made in the course of cross-examination to discredit a witness, but the competent witness who is honestly endeavouring to express his views always has the sympathy of the tribunal and will be protected against any improper attempts to draw wrong conclusions from his statements. Counsel of experience are extremely careful in their treatment of the expert witness and seldom ask a question of which they do not know the answer.

Senior counsel engaged in a case some time ago in the Supreme Court, in which an expert medical witness was called, asked what treatment he would prescribe if counsel had a certain complaint and was told by the medical witness: "I would order you rest, have you put to bed, order the lightest of diet and—er—cut off all stimulants." "Thank you, doctor, you need not call again," Counsel immediately remarked, and sat down.

The example of the inexperienced counsel who over-cross-examines, happened in a case which concerned a young lady who was expelled from college for a breach of discipline and was appealing for reinstatement. After asking many questions in an endeavour to obtain from a junior school mistress an admission that the breach was a very trivial matter, he said: "Now, Miss Smith, what harm do you suggest could come from a girl eating sweets?" The witness replied: "You might as well ask me, Sir, what harm could come from a young lady eating an apple!"

In a country case I remember counsel suggesting several times to a medical witness that a patient's conduct could not have been as bad as it was painted by the matron of the hospital. The doctor finally replied: "It was not what you would expect of an ordinary patient, but this man was a moribund maniac." The cross-examination on those lines was not continued.

In reexamination witnesses are given an opportunity to explain further statements made under cross-examination. Frank admissions under cross-examination enhance the value of the opinions expressed by witnesses just as a lack of candour discounts their value.

On the question of the value of expert evidence a leading authority has stated that:

The testimony of experts is usually considered to be of slight value, since they cannot be indicted for perjury, are proverbially, though perhaps unwittingly biased in favour of the side which calls them, as well as over-ready to regard harmless facts as confirmation of preconceived theories; moreover, support or opposition to given hypotheses can generally be multiplied at will. Indeed, where the jury accepts the mere untested opinion of experts in preference to direct and positive testimony as to facts, a new trial may be granted. In *Bowden v. B.*, 42 L. Jo. 402, the Court accepted the evidence of a wife as to the paternity of a ten months' child in spite of the unanimous opinion of several doctors. And in *R. v. Follett*, 47 L. Jo. 34 (1912), the Recorder of London went the length of stating that, in forgery cases, the practice of calling experts in handwriting had been discontinued in consequence of the grave mistakes they had made (*Phipson*, Sixth Edition, page 386).

His Honour Judge Backhouse had to decide on expert evidence whether certain boats were built of cedar or Queensland maple.

Experts on both sides minutely examined samples of the timber used in the construction of the boats and all on one side emphatically declared it was cedar, while those on the other side were just as emphatic in their opinion

that it was maple. His Honour, at the conclusion, said: "My opinion has always been, and this case confirms it, that all expert evidence should be called by the Crown!"

It is no doubt in pursuance of that principle that we have the system of medical boards under the *Workers' Compensation Act*.

His Honour the Chief Justice recently had to decide the question whether an engine bedplate sixteen feet in length could be successfully welded by either the oxy or arc welding process.

The piece of metal was so large that it could not be satisfactorily heated, and the risk of distortion rendered the welding impracticable one set of experts said. They were in due course contradicted by the other party's experts. His Honour held it was impracticable to weld the plate satisfactorily and decided accordingly.

In a case I heard recently a carpenter had lost the ring and little fingers of one hand more than a year before and exhibited his hand with the middle finger flexed almost on to his palm when the forefinger was fully extended. Expert opinion on one side was that the flexion of the middle finger was the result of neurosis, on the other side that it was probably caused by adhesions. My decision was to have an anæsthetic administered in the presence of the experts and the Chief Medical Referee. His report was that immediately the patient was anæsthetized the bent digit straightened of its own accord, but when the patient was recovering from the anæsthetic it assumed its old flexed position.

I often wish expert opinion could be so readily tested.

Most text book writers suggest that the expert inclines to the opinion which supports the party calling him as a witness and, to some extent, his opinion should be accepted with caution. Nevertheless, my experience has been that the majority of those appearing in the *Workers' Compensation Jurisdiction* always endeavour to be fair. This is shown by the fact that very few are engaged exclusively by one side or the other. The expert called for the applicant in one case may give evidence for the respondent in the following case.

By furnishing the tribunal with the best information according to the state of medical knowledge concerning questions in dispute, the members of your profession assist the tribunal in arriving at reasonable and impartial decisions and thus do justice between the parties. So long as eminent consultants continue to regard it as a public duty to assist tribunals in this manner, the community can have no just cause for complaint in regard to your profession's attitude towards and interest in its compensation and industrial problems.

I wish to take this opportunity of expressing my gratitude to the members of your profession who have seen fit to assist my Commission in the solution of many of the difficult problems with which, from time to time, it has been confronted. I want particularly to thank those members of the profession who undertake the duties of members of medical boards for the careful, efficient and impartial manner in which they discharge those duties and place within easy reach of the workers, employers and insurers the fruits of their training, experience and research.

THE SELECTION OF AN ANÆSTHETIC.¹

By LEO DOYLE, M.B., M.S. (Melbourne),
*Honorary Surgeon to Out-Patients, Saint Vincent's Hospital,
 Melbourne.*

I AM quite conscious of the honour that has been done me in entrusting to me the task of addressing you on a subject with which you are all fully familiar. It is difficult for one, not a specialist in a particular branch, to say something of value to an audience consisting largely of specialists in that particular branch, so that if I appear to be uttering platitudes I hope my audience will not see the platitudes but rather a man groping in a sea of difficulties trying to ascertain how much is completely good, how much is partially good and how much is dangerous.

The whole art of modern surgery is based on a foundation of anæsthesia, and so the question of anæsthesia in these days, with the vast and increasing number of life and pain saving operations, is one that is ever with us. In the old days the good surgeon was the bold and quick surgeon, but with the advent of anæsthesia, the need for abnormal speed disappeared, and now the good surgeon does everything deliberately and leaves, as far as possible, nothing to chance. This has led to the development of surgical undertakings requiring much time for their completion even when done by dexterous surgeons; these protracted operations have taught us that the anæsthetics themselves are not without their dangers, both immediate and more or less remote.

Nowadays there is such a great amount of material to consider and so many new drugs and methods are brought forward, each of them promising the ideal, that one has to stop and consider their conflicting claims and try to see how each anæsthetic can have its best use. For as yet there is no method that is wholly safe, nor safely applicable in all cases. Some methods are ideal for certain cases, and certain cases fit certain methods well. My lecture tonight is to be an account of my own experiences with different methods and different ways.

For many years chloroform held the field undisputed until it was gradually ousted by ether, and now many surgeons regard the chloroform bottle as a weapon of evil, the use of which is more than likely to lead to the death of the patient.

When I was taught to administer anæsthetics about nineteen years ago at St. Vincent's Hospital, ether preceded by alcohol, chloroform and ether mixture, given with a Shields inhaler, was the method of choice. This and open ether preceded by ethyl chloride continued to be my stock methods during my career as house surgeon. Now in its turn, as newer anæsthetics have been discovered, it is being admitted that even the innocuous ether is not without its dangers, and so we advance to the more volatile gases, nitrous oxide and ethylene. For many years past there has also been advancing slowly a school of anæsthetists who claim that inhalation anæsthesia is a thing to be avoided

whenever possible and that what is called "local anæsthesia" is the anæsthesia of the future.

Do we require of an anæsthetic that it shall simply render the patient incapable of feeling the pain of an operation either by rendering the site of the operation alone insensitive, or by rendering the patient completely unconscious? The answer is that, provided the anæsthetic method is safe, either method is sufficient for some patients. The ideal result allows the surgeon to perform painlessly and deliberately any surgical manœuvre and secures for the patient a minimum of risk and discomfort, bodily and mental, and a freedom from anæsthetic complications. The question of cost to the patient, both in degree of risk, mental strain and money, must also be considered when this has a direct bearing on the patient's well-being. I have heard surgeons condemn local anæsthesia as being too time-consuming for them, as with it they could not get through their day's programme. They are just as wrong as the surgeon who insists on local anæsthesia for a patient who fears to be operated on whilst conscious. The one is considering himself and not his patient, and the other is subjecting his patient's nervous system to a severe shock.

Now it must not be thought from this that I am condemning both the man who uses ether and the local anæsthetist; such is not my intention. I wish to condemn and do so strongly, the man who fits his patient to his anæsthetic. In this short paper I wish to make a plea for surgeons to fit the anæsthetic to the patient. With this in mind, I intend to state as briefly as possible what anæsthetics are suitable for different types of patient.

There are numerous patients whose condition, either mental or physical (especially the latter), is such that the ordinary methods of anæsthesia fall short of what is wanted. For the physically deficient, ordinary methods are not safe, and the nervous patient requires consideration in both the pre-operative and post-operative periods. I think the best method of approach to the subject will be by considering separately the various anæsthetic agents, the various adjuncts and the patient, and finally to consider them altogether. In this way by a process of fitting the various anæsthetic methods to the various types of patient, one may hope to fit the best method to each individual patient.

THE ANÆSTHETICS.

Chloroform.

Chloroform has its advantages in certain instances. Whilst undoubtedly not so safe as ether, it is not inflammable, and when one wishes to use either the actual or the diathermic cautery in the air passages it is very valuable. I can remember using the diathermic cautery in treating a carcinoma of the posterior third of the tongue, using chloroform given in a Junker's inhaler. The anæsthesia here was quite good. One valuable point in an operation of this kind is the freedom from secretion associated with chloroform anæsthesia.

Ether.

Open ether is probably the most extensively used anæsthetic today, and rightly so, for its convenience

¹ Read at a meeting of the Section of Anæsthetics of the Victorian Branch of the British Medical Association on October 17, 1930.

and its slight degree of risk. It is at present the anæsthetic of choice for most surgical operations, but there are many cases in which it is excelled by other methods. To deal with the indications for ether would be an endless task. I propose therefore to deal only with its contraindications and to outline some of the indications for other types of anæsthesia. Ether is contraindicated in pulmonary tuberculosis, in advanced cardio-renal disease and when the age and poor general condition of the patient would lead to the fear that more or less prolonged ether inhalation might result in post-operative pneumonia. It should also be avoided when the operation is for cerebral disease. In addition there are patients who could be quite safely anæsthetized with open ether, but for whom other methods of anæsthesia are preferable.

Before leaving this subject, it might be as well to say that efficient ether anæsthesia, whether preceded by morphine and atropine or not, depends entirely on the provision of an efficient airway. When the airway is open, the anæsthesia is good and the patient is quiet and not straining. The artificial airway of Hewitt is I think one of the greatest, because the simplest, aids to efficient anæsthesia that has come our way.

Ether Administered by the Intratracheal Method.

The intratracheal administration of ether with its more or less expensive and heavy paraphernalia is the result of the recognition of the necessity for an efficient airway and of another necessity, namely, preventing blood *et cetera* from being aspirated into the lungs.

Patients who have an obstructed airway, for example, those suffering from intrathoracic goitre and some conditions of the mouth and upper air passages, require the intratracheal administration of ether.

I remember one boy with a very large substernal goitre who, before his operation could be commenced, became extremely cyanosed and looked as if he might die from suffocation. The intratracheal catheter was passed, and immediately the boy gave a few deep gasps and then went on to take his anæsthetic quite satisfactorily.

It may be stated here that a laryngeal speculum is not absolutely necessary to pass the catheter. If the mouth is gagged open, the index finger can generally be hooked over the epiglottis and then the catheter can be passed alongside the finger through the larynx. Intrathoracic operations are an indication for some form of intratracheal administration of anæsthetic so that the lungs may be inflated when necessary.

Ether Administered by the Intraparyngeal Method.

The administration of an anæsthetic by the intraparyngeal route, when ether vapour is blown into the pharynx by means of a motor blower, is the anæsthetic of choice for the operation of tonsillectomy; to watch the modern throat specialist dissecting tonsils with the use of a Davis gag and intraparyngeal ether, is to wonder how the old mask anæsthetic and guillotine operation lasted as long as it did.

Ether Administered by the Colon or Rectum.

The method of administering an anæsthetic by way of the rectum or colon, introduced some fourteen or fifteen years ago, promised great results, but for various reasons it was dropped. The main reason was that in many instances the depth of anæsthesia produced was not sufficient for all purposes. In many instances this lighter anæsthesia is useful. I have recently begun to use it again in selected cases. For cerebral surgery it is better than ether given through the respiratory tract on account of its freedom from the venous congestion that so usually accompanies inhaled ether. By combining it with local anæsthesia of the scalp, we have a combination of unconsciousness which is very desirable in these rather protracted operations and also freedom from noxious shock producing nervous impulses. Again, the small amount of ether expired through the lungs is not a contraindication to the use of the rectal method when one wishes to use the electric cautery in operating for carcinoma of the breast.

In dealing with big heavy-necked men who take open ether only with difficulty, it will be found that by giving an ordinary dose of rectal ether the anæsthesia produced, whilst not sufficient for ordinary operative purposes, is sufficient to make the patient susceptible to a very small amount of inhaled anæsthetic.

Gas and Oxygen.

The administration of a mixture of nitrous oxide or ether and oxygen gives a very quickly induced anæsthesia and a very good one, as the drugs are very rapidly eliminated and the patient recovers very rapidly. This is the method of choice for the anæsthesia of patients who are very badly shocked or extremely toxic, or to whom it is thought for other reasons that the administration of ether would be dangerous. It involves the using of a rather cumbersome apparatus, but it is a method that has come to stay.

I recollect a very old man, quite delirious and extremely ill, with a carbuncle fully 25.0 centimetres (ten inches) in diameter on the back of his neck. I am quite certain that if this man had been given ether he would have died. The carbuncle was operated on under nitrous oxide anæsthesia and the patient did very well.

Local Anæsthesia.

In local anæsthesia some men see the anæsthetic of the future, but in my opinion, whilst I do not think that local anæsthesia will ever be the sole method employed, the time is rapidly approaching when some form or other of local anæsthetic will be used with or without some general anæsthetic.

Cocaine.

Cocaine is a drug of which I have not had much experience, as it is used mainly as a surface anæsthetic, and this is a method I do not employ, except for anæsthesia of the urethra, when I use another drug. Cocaine is toxic in small doses, and some patients have for it an idiosyncrasy, and for these even the smallest doses of cocaine are likely to prove fatal.

"Novocain."

"Novocain" I think is the drug in most use today. It is very slightly toxic and amounts up to one gramme can be safely given in inducing infiltration anaesthesia. When it is combined with adrenalin the action is prolonged, and in fact one may say that without adrenalin the action is so transient as to be of very little use.

"Percain."

"Percain" is a quinine derivative recently introduced by Bayer; it acts very satisfactorily as a "Novocain" substitute. It is more toxic than "Novocain," but is used in extreme dilutions, a solution of 0.05% in saline being very satisfactory for infiltration anaesthesia; 400 cubic centimetres of this solution is the limit of safety as stated by the makers. For regional purposes it may be used in a 0.1% or 0.15% solution. It should always be combined with adrenalin. The great advantage of this drug over "Novocain" is the duration of anaesthesia produced; it acts at times for as long as ten hours. A disadvantage is that it seems to produce a stinging effect when first introduced. It is also said to produce a surface anaesthesia, but in my opinion the surface anaesthesia produced is not satisfactory. It is also recommended for spinal anaesthesia, but I have been afraid to try it on account of its long persisting action.

"Borocain."

"Borocain" is a cocaine derivative, or rather a "Novocain" derivative, which is said to have an action on mucous membranes and so to produce a surface anaesthesia. I have used it a lot for anaesthetizing the male urethra as a preliminary to cystoscopic examination, with very satisfactory results. I have used "Percain," but I do not think that it is quite as satisfactory as "Borocain."

Adrenalin.

All these useful drugs are better used in conjunction with adrenalin. It used to be taught that a strength of 1 in 100,000 combined with "Novocain" would produce a satisfactory anaesthesia. When I was using this strength I had several reactions which I thought were attributable, not to the "Novocain," but to the adrenalin, and find that 1 in 250,000 or 1 in 300,000 gives a very satisfactory result with a complete absence of any reaction.

Local Anaesthetic Methods.*Infiltration.*

A common method of producing local anaesthesia is by infiltration, by which an attempt is made to infiltrate with anaesthetic solution the whole of the area to be operated upon. If this is completely done the anaesthesia is always satisfactory. A good tip which was given to me years ago and which, I think, is a very good one for beginners, is to mix a little methylene blue with the solution; the operator then knows that whilst he is operating on the stained area he is operating on an analgesic area, and if the area is not stained with methylene blue, any operation that takes place in that area will cause

the patient pain. Any inflammatory process in the area to be operated upon should absolutely preclude the use of infiltration anaesthesia, as the injection may spread the process, or, by interfering with the blood supply, allow the process to spread itself.

Regional Anaesthesia.

Regional anaesthesia is another very good method of employing local anaesthesia. In this way an attempt is made to deposit in and around the nerve or nerves supplying the area, sufficient solution to block their function and thus to render analgesic the area of operation. Outstanding examples of this method are the injection of "Novocain" solution in the sacral canal to produce anaesthesia of the sacral nerves and the injection of the drug around the inferior alveolar nerve to produce anaesthesia of the mandible on the same side. Anyone who has seen an operation for haemorrhoids performed on a patient under sacral anaesthesia will never want to use any other anaesthetic. Sacral anaesthesia can also be used for cystoscopy, perineorrhaphy, excision of the coccyx, excision of the lower end of the rectum, and, combined with abdominal wall block, for prostatectomy. Regional anaesthesia of a digit must never be employed when an infective process is to be opened in that digit unless the injection is given so far away from the base of the digit that there is no danger of interfering with the blood supply. For example, injections at the root of the digit are forbidden, but the ulnar nerve may be injected at the elbow or wrist when it is desired to open an abscess of the little finger.

Spinal Anaesthesia.

Another method of local anaesthesia which is rapidly coming to the fore after a period in which it appeared to have died, is spinal anaesthesia. This is really a method of regional anaesthesia in which nerves are blocked by an anaesthetic drug before their exit from the *dura mater*. It was first discovered many years ago, but on account of fatalities and accidents which were thought to be unavoidable it fell into disuse. Recently it has been revived, and the assistance of a little common physiological sense has made it an extremely safe method of anaesthesia; how safe, however, is more or less a matter for debate. Those who use spinal anaesthesia only for those patients who are moribund will tell you this. Those, on the other hand, who use spinal anaesthesia as a routine for patients to whom it is applicable, will tell you that it is a perfectly safe form of anaesthesia for operations below the level of the umbilicus.

Drugs used for inducing spinal anaesthesia are "Novocain," "Spinocain" which is a solution of "Novocain" mixed with glyadine alcohol and a little strychnine, "Tropacocain" and "Percain." "Spinocain," which produces what its inventor, Pitkin, calls controllable spinal anaesthesia, is very much in favour in the United States of America. In my mind it has its defects which do not counterbalance its value in enabling one to control the level of anaesthesia. Its greatest defect, in my mind, is that, being lighter than spinal fluid, it tends to flow upwards, and if the patient's head and thorax

become higher than his lumbar vertebrae, it will probably produce disastrous results. We are told that after the "Spinocain" injection the patient must not move out of the Trendelenburg position for some hours. Whilst this may be a desirable thing in some cases, it is easy to see that it is highly undesirable in others.

"Novocain" crystals put up sterilized in ampoules, in my opinion, are the best substance for inducing spinal anaesthesia. This is simply done by doing a lumbar puncture and withdrawing a little spinal fluid, dissolving the crystals in this and reinjecting. The essential detail in inducing spinal anaesthesia consists in putting the patient in a moderate Trendelenburg position and keeping him in this position until the effects have worn off. This occurs in about an hour to an hour and a half, when the patient can be placed in the Fowler position if necessary. The reason is that as we get a paralysis of the abdominal muscles and of the mesenteric vasoconstrictors the patient's blood is likely to accumulate almost entirely in the abdomen, and by keeping the patient in the Trendelenburg position we rely on gravity to keep the vital centres in the brain thoroughly bathed with blood. An injection of ephedrine also helps to prevent the blood pressure from falling too low, and thus prevents syncopal attacks. "Percain" is a drug for spinal anaesthesia that to my mind suffers from the same defects as "Spinocain," though for a different reason. "Percain" produces a long anaesthesia, and this means that the patient must be kept for a long time in the Trendelenburg position in order to prevent cerebral anaemia.

Basal Anaesthesia.

In conjunction with these methods of which we have just been speaking it is possible by means of other drugs to intensify the effects and also to produce a deeper degree of anaesthesia with the exhibition of minimum quantities of ether *et cetera*. The commonest of these is morphine with or without hyoscine and atropine. Any patient who is going to have an inhalation anaesthesia should be given a preliminary dose of atropine, which lessens his bronchial secretions. I think that most patients who are going to have ether or gas and oxygen are the better for a little morphine as well as atropine. Hyoscine is a drug of which I am frightened. Undoubtedly it works extremely well in some cases, and just as undoubtedly it makes some patients literally and metaphorically "see red."

As a preliminary to a local anaesthetic a dose of morphine is very useful particularly when the surgeon is certain that the anaesthesia is going to be good. If, however, he is doubtful as to how good his anaesthesia is going to be, he must remember that by giving morphine and hyoscine he will destroy the patient's ability to cooperate with him.

Recently, realizing that it was possible to protect patients to a greater extent in their pre-anaesthetic and post-anaesthetic periods than I had done before, I have been using drugs with this intent. My object has been to produce a sleep before operation and to try and carry this sleep on for some hours after

operation. To produce this I have been using paraldehyde. About two and a half hours before operation a hypodermic injection of morphine in a dose of 0.016 gramme (one-quarter of a grain) is given and followed in about half an hour by 20 to 24 cubic centimetres (five or six fluid drachms) of paraldehyde in a small amount of saline solution given *per rectum*. As a result of this the patient approaches the operating theatre in a very somnolent state and often remains in this state for some hours after the operation is over. After operation I give more paraldehyde, say 12 cubic centimetres (three fluid drachms) if some has already been administered, or 20 to 24 cubic centimetres (five or six fluid drachms) if he has not been given any before operation. The effects of this treatment vary. Many patients, if the results are good, sleep well all the rest of the day. If the results are poor, the patients are drowsy but wake and complain of pain and require a little morphine. All are, I think, benefited to some extent, though some more than others. "Luminal" I have given in much the same way in doses of 0.18 gramme (three grains) the night before operation and about 0.72 gramme (twelve grains) in the morning two hours before the operation is due to start. The use of "Luminal" causes a fall in the blood pressure, and so should not be used in all cases. "Luminal" works better than paraldehyde, the patient nearly always coming to the theatre quite asleep and then remaining asleep for the remainder of the day. These patients are quite amnesic and have no recollection whatever of their operation. I have used this method when removing goitres, and though patients complained when the thyroid was being lifted out of position, they have had no recollection of any sort the next day. In the treatment of others results are not so good and the patients have hazy recollections of their operation. This is I think the method *par excellence* for patients suffering from goitre. "Sodium Amytal," of which we have heard so much lately, is another drug of which I am a bit frightened. Features about it of which I am frightened are, firstly, the big fall in blood pressure which it causes, and secondly, the post-operative restlessness which, I understand, is quite a feature following its use in some cases. "Avertin" is another drug, the uses of which I have not explored.

THE PATIENTS.

It has been said that the problem of anaesthetics is the problem of the poor risk patient. This statement is only half true. It is only true to the extent that the bad risk patient cannot take ether, but it also conveys a wrong impression, as it implies that ether is the anaesthetic for all but the bad risk patient. Without any doubt ether can be used for most patients who are not bad risks, but ether is by no means the best anaesthetic for all those who are good risks, as there are certain operations and certain regions which are much more suitable for other types of anaesthesia. We can state generally that ether is not the best anaesthetic for patients suffering from advanced cardiac, vascular, renal or pulmonary disease, nor for very shocked

or toxic patients. Quite apart from regional and operation considerations, we must try to find other anaesthetics for these patients, and here is where we use gas, local or spinal anaesthesia according to the type of operation required.

Again it must be remembered that gas, local and spinal anaesthetics require a certain amount of familiarity with their use, and, as this familiarity can be gained only by practising these methods constantly, the man who does not use them until he is forced will find that he is incapable of getting the best, or often, any result from them.

I would advise any man who is constantly operating to use these methods on patients who could quite easily take ether until he is quite familiar with them all. If he does this, he will be surprised how soon he will come to prefer these methods. He will also note quite a considerable improvement in the post-operative convalescence of his patients.

The routine examination will often reveal the existence of vascular disease, but there are one or two indices and tests that will help to determine the operability of a patient. Moots's index is one of these. Moots's index is the pressure ratio percentage and is obtained by dividing the pulse pressure in millimetres of mercury by the diastolic pressure, for example $\frac{40}{80}$ gives 50%, the normal.

Figures taken from a series of cases showed that when the percentage was 40 to 60 the death rate was about 3%, and when it was between 60 and 75% or between 40 and 25% the death rate increased to 10%. When it was 75% and over or 25% and under there was a death rate of 23%. This is not an absolute guide, but, taken in conjunction with other factors, quite a useful one.

Another guide is the shock index, which is said to show a patient's liability to suffer from surgical shock. It is the $\frac{\text{Systolic pressure} \times 100}{\text{RBC} \times \text{Hb \%}}$, where the systolic pressure is expressed in millimetres of mercury and RBC = the first two figures of the number of red blood cells per cubic millimetre and Hb % = the haemoglobin percentage.

For example:

$$\frac{120 \times 100}{50 \times 100} = \frac{12,000}{5,000} = 2.4 = \text{the shock index.}$$

An index of seven seems to be the extreme limit of safety. A result of over seven indicates that shock is inevitable, and therefore methods must be taken to combat it.

The total capacity as measured by the breath holding capacity in seconds is another useful guide. An ability to hold the breath for forty seconds or more shows that the patient may safely be operated upon, for between twenty and forty seconds, that operation is probably safe and for less than twenty seconds, that the result will be bad.

The history and examination by the stethoscope and the X rays will show evidence of pulmonary disease. The urinary examination, urea concentration test and blood chemistry will reveal the presence of renal disease. Other considerations that will

influence the choice of an anaesthetic are the age and mentality of the patient.

As regards age, babies can be operated on with local anaesthesia alone, but children cannot. They become frightened and nervous. General anaesthesia of some sort is practically always a necessity. To progress to the other extreme, some people are too old to be safely operated upon under ether anaesthesia, and for these a local anaesthetic with or without gas is a necessity unless gas alone can be used.

For patients of unstable mental condition local anaesthesia is again contraindicated, unless it be combined with some form of general anaesthesia. "Luminal" would probably work well for these patients.

Having now exhausted the general indications for different types of anaesthesia, there remains the consideration of the operations to be performed, and these I think can best be considered regionally.

THE OPERATIONS.

Operations on the Scalp.

Local anaesthesia is the best for all scalp operations and operations involving the cranial bones. If the operation is going to be of long duration, some basal anaesthesia with colonic ether or "Luminal" would be of much value. I have not yet used "Luminal" when the operation is in this region. The combination of local infiltration and rectal ether I have tried and found very good.

Operations on the Face.

Nearly all operations on the face are easily and well done under local infiltration anaesthesia, or, if possible, anaesthesia by blocking one of the branches of the trigeminal nerve. Ether here is at a disadvantage unless given intranasally or by pharyngeal methods. Mouth operations again are very suitable for local anaesthesia. The inhalation or rectal administration of ether may again be regarded as a possibility. I have had no experience of the intratracheal administration of ethylene, which I am told is very good; of course, gas can only be given for operations in this area by the intratracheal method.

Operations on the Neck.

The neck is a region for operation on which all methods have a sphere of utility. Exophthalmic goitre is best handled under local anaesthesia with the addition of gas and oxygen when the patient's mental condition is such as to preclude the use of local anaesthesia alone. I have recently used "Luminal" in these cases as an adjuvant to local anaesthesia and have been very pleased with the result of the combination. I have recently substituted "Percain" (0.05%) for infiltration and the long anaesthesia thus secured, when combined with some basal method, gives a very good result. I cannot see the necessity for intratracheal methods unless there is some obstruction, and then they are absolutely necessary for any inhalation anaesthetic. The large block dissections required for the removal of malignant glands are quite nicely done under local anaesthesia which is a consideration here, as the patients are generally fairly elderly

and not the best risks for ether, although I have used both inhaled and rectal ether for these patients. Nevertheless, I consider that local anaesthesia is far superior.

The presence of acute adenitis is a contraindication to the use of local infiltration, but ordinary tubercular glands when there has been no breaking down with pus formation can be removed easily under local anaesthesia.

Operations on the Breast.

While most of the minor surgery of the breast, excluding the treatment of acute mastitis and including a mastectomy, may be done under local anaesthesia, a radical operation for carcinoma requires a general anaesthetic. Ether, rectal ether, "Luminal" or paraldehyde are useful here.

Empyema surgery in my opinion demands local anaesthesia and the use of ether in these cases is wrong. Thoracoplasty is an operation that requires an amount of consideration on the part of the anaesthetist. In a recent case I used a basal anaesthesia of morphine and paraldehyde followed by local infiltration with "Percain," and then when the actual rib resection was being done, nitrous oxide and oxygen were given. Although rather difficult for the surgeon the result to the patient was extremely good.

Operations on the Upper Part of the Abdomen.

For operations on the upper part of the abdomen all methods of anaesthesia have their uses. Many operations on the stomach, such as gastroenterostomy, can be done under regional abdominal wall anaesthesia, but if much pulling has to be made on the stomach some additional anaesthesia is necessary. This can be obtained by giving nitrous oxide and gas or by making a splanchnic block either by the posterior route of Kappis or the anterior route of Braun.

Whilst I have used gas and local anaesthesia for cholecystectomy, I do not think it is ideal as the respiratory movements are rather too exaggerated, and I think that ether is better than gas for this operation for routine purposes. I would like to say here that I think that some of the shock of an operation on the upper part of the abdomen comes from the action of retractors on the abdominal walls, and this amount of shock can be largely eliminated by the use of regional anaesthesia and the use of a self-retaining retractor which cuts out the constantly repeated painful pulls on the muscle and substitutes a steady traction which soon tires the muscle out.

Operations on the Lower Part of the Abdomen.

The lower part of the abdomen is the field for spinal anaesthesia. Spinal anaesthesia results in a completely painless operation and a paralysed abdominal wall which allows the intestines to fall out of the way. The relaxation and exposure given have to be seen to be believed. To my mind it is the anaesthetic of choice for all operations on the lower part of the abdomen, especially shock-producing ones as Wertheim's operation or the abdomino-perineal resection for carcinoma of the rectum. For prostatectomy it is again a very fine anaesthetic, and for operation for the relief of large

herniae it is also good owing to the laxity it gives the abdominal muscles. By using spinal anaesthesia I have succeeded where others have failed in repairing large incisional herniae of the lower part of the abdomen.

Abdominal wall block combined with sacral anaesthesia makes a good anaesthetic for prostatectomy but the technique is more difficult and time consuming than spinal anaesthesia. All herniae are better operated on under local or spinal anaesthesia than any form of inhalation anaesthesia owing to the lax abdominal walls secured by the former methods and the lack of post-operative straining associated with vomiting.

I do not wish to say that gynaecological operations should not be done under ether anaesthesia, as I think this anaesthesia is quite safe and certainly the easiest for this type of work, but just let the gynaecologist get the taste for spinal anaesthesia and I am certain he will be all for it.

Anaesthesia for surgery for the treatment of acute abdominal disease is at times quite a problem. The operation for an ordinary acute appendicitis of twenty-four hours' duration or less, if there are no conflicting indications, can be easily done under ether anaesthesia.

Recently I had to go to the country to operate for acute appendicitis on a patient who was a tabetic and a diabetic. The tabes contraindicated spinal anaesthesia and the diabetes precluded ether. He was said to be a large man and rather fat, but he turned out to be rather well muscled than fat. Dr. Davies brought his gas machine and I supplied a local infiltration of the abdominal wall, and thus we removed a more or less gangrenous appendix, and he went on to an easy recovery.

Intestinal obstruction, when advanced, provides a difficult problem for ether administration, but here again, most of the life saving operations such as enterostomy, caecostomy or colostomy can be done under local infiltration of the abdominal wall. If, however, the abdomen has to be explored spinal anaesthesia will be indicated, and for patients with enormous distension it is easily the best anaesthetic.

Fractures.

The reduction of a fractured bone of the upper limb, particularly the shaft of the humerus or either of the bones of the forearm, is simply carried out under local infiltration anaesthesia around the fractured ends. Open operation can also be done. In saying it can be done, I am understating the case. Anyone who has experienced the complete relaxation that is provided by local anaesthesia, will I think always use it when possible, even if he has to use some general anaesthetic to satisfy the patient's desire for unconsciousness. I have done open operations on a fractured femur under spinal anaesthesia to the complete satisfaction of the patient and myself. Spinal anaesthesia is also excellent for the reduction of a fractured neck of the femur and the application of a Whitman's cast.

CONCLUSION.

I hope I have not overstated the case for local and spinal anaesthesia. I know I have not understated it. I hope you will not think that I am

anti-ether. I am not. My aim is to assess each patient and give him the anæsthetic that is suitable to his physical and mental condition and to the operation to be carried out.

Let me ask for your forgiveness for the constant repetition of the first person singular. It has happened because I have tried to tell you my own thoughts and opinions for whatever value you may care to place on them.

Finally, let me thank you for your patience in listening to such a long and, I fear, ill-balanced paper.

Reports of Cases.

CONGENITAL DIAPHRAGMATIC HERNIA IN A YOUNG GIRL.

By P. L. HIPSLEY, M.D., Ch.M. (Sydney), F.C.S.A.,
Honorary Surgeon, the Royal Alexandra Hospital for Children, Sydney.

HELEN B., aged ten years, was admitted to the Royal Alexandra Hospital for Children on November 17, 1930, complaining of having suffered for as long as she could remember from repeated attacks of abdominal pain and vomiting. The attacks occurred every five or six weeks and lasted for two or three days. A soreness remained in the epigastric region for several days after the attacks, otherwise her health was good between the attacks. The pain was severe and situated in the umbilical rather than the epigastric region. The vomiting was persistent during the attacks; nothing whatever could be retained for several days. The material vomited was mostly brownish fluid which was sometimes streaked with blood.

The mother said that the child was a healthy infant at birth, weighing 3.4 kilograms (seven and one-half pounds). The child had been fed at the breast alone for the first three months. During this time she did not vomit her food, but always seemed to be in pain. The vomiting started after three months, when artificial food was first used, and continued at short intervals from that time onward. The attacks became slightly less frequent as the child got older, but seldom more than six weeks elapsed without an attack. Two years before her admission to the Royal Alexandra Hospital for Children the appendix had been removed and after the operation she had remained jaundiced for about three months.

Dr. T. Y. Nelson, who sent the patient into hospital, ordered an X ray examination after an opaque meal. This was done by Dr. Sear who reported the presence of a diaphragmatic hernia. About half the shadow of the stomach appeared to be above the diaphragm. The shadow extended from the region of the œsophageal hiatus upwards and to the right, and the greater part of the shadow appeared to be above the right dome of the diaphragm.

Examination which was made between attacks revealed nothing abnormal about the child. She was a rather spare but healthy looking girl and abdominal palpation revealed no abnormality whatever.

Operation.

Under open ether anæsthesia an oblique left rectus incision was made parallel to and about 2.5 centimetres (one inch) below the left costal margin. The rectus muscle was divided. After opening the peritoneum a Worrall retractor was inserted to hold the left lobe of the liver aside; this gave an excellent exposure of the left dome of the diaphragm. About half the stomach could be seen passing through an enlarged œsophageal hiatus; as there were no adhesions this could be readily withdrawn. The hernial opening admitted three fingers readily. The sac passed upwards behind the pericardium.

A stomach tube was passed through the mouth into the stomach. The lower end of the œsophagus was then dissected free from its peritoneal covering. The diaphragm at the sides of the hernial opening was sutured with chromic gut behind the œsophagus; a few sutures were inserted between the edges of the opening and the lower end of the œsophagus. Several sutures were then inserted between the first portion of the greater curvature of the stomach and the left dome of the diaphragm. The abdominal wound was then closed.

It was considered advisable to paralyse temporarily the left dome of the diaphragm by crushing a section of the phrenic nerve; this was done with the aid of a fine pair of artery forceps, after the nerve had been exposed by the usual incision in the neck.

The child left hospital apparently quite well three weeks after operation.

Comment.

Since the advent of the Röntgen ray, diaphragmatic herniæ are being recognized more and more frequently; the œsophageal variety is the one most commonly seen. The symptoms may begin at birth or at any time during life. Like the congenital inguinal hernia, diaphragmatic hernia may be only a potential hernia at birth; a definite hernia may be produced later by some type of injury or by increased intraabdominal pressure. When the hernia has existed for many years, extensive adhesions may cause great difficulty in the operation, and many surgeons favour exposure through the thoracic route or a combination of the abdominal and thoracic routes.

COMPLETE OBSTRUCTIVE JAUNDICE DUE TO OBLITERATION OF THE COMMON BILE DUCT IN A CHILD.

By R. L. THOROLD GRANT, M.B. (Adelaide),
M.R.C.P. (London),
Honorary Assistant Physician, Children's Hospital, Adelaide;

AND

L. O. BETTS, M.B., B.S. (Adelaide), M.Ch.Orth. (Liverpool),
Honorary Surgeon, Children's Hospital, Adelaide.

THE case described here is so unusual and presented so many diagnostic difficulties that it is deemed worthy of record.

L.K., a boy, was first seen by one of us (R.L.T.G.) in January, 1928, on account of screaming attacks, said to be due to pain in his head. He was then six years old. Physical examination revealed no abnormality. He was seen again in February, 1930, when he was eight years of age. The mother stated that he had been jaundiced since November, 1929. This statement was confirmed by the family medical attendant. His skin was very itchy. The urine was dark; the stools were putty coloured. The jaundice had gradually increased in intensity without any remission.

He was a very poorly nourished child and had obviously lost a considerable amount of weight. The skin was deeply jaundiced and covered with scratch marks. The scleræ were olive coloured. A few small lymph glands were palpable in the neck, axillæ and groins. The liver was enlarged; the lower edge was easily palpable and dullness extended from the fifth rib to 2.5 centimetres (one inch) below the costal margin. The spleen was not enlarged. The urine contained bile, but no urobilinogen.

The jaundice gradually deepened during the subsequent days while he was under observation.

Histological examination of a gland removed from the groin revealed no abnormality. The blood serum did not react to the Wassermann test. Van den Bergh's test resulted in an immediate direct positive reaction; the bilirubin was increased to four units. There was no response to the Mantoux test. There was no response

to the Casoni test. Radiological examination of the chest revealed no abnormality. The fragility of the red blood corpuscles was found to be slightly decreased. Cholecystography was performed, but no shadow of the gall bladder was thereby outlined. The l  vulose tolerance test was carried out; this revealed slight but definite impairment of the liver function. Microscopic examination of the urine revealed no leucin or tyrosin crystals. A tube was passed into the duodenum by the mouth; no bile was demonstrated in the aspirated contents. The faeces were submitted for examination for parasitic ova, but none was detected.

At this stage of the investigation a halt was called. The boy was losing weight and his general condition was far from good. The diagnosis was very much in doubt. There was a complete obstructive jaundice from some acquired cause. It was thought that there might be a gall stone blocking the common duct in spite of the absence of pain at any stage of the child's immediate past. After consultation exploratory operation was decided upon, five months after the onset of jaundice and one month after all tests had proved the obstruction to be complete.

The abdomen was opened by a right paramedian incision. The liver was enlarged. The gall-bladder was not distended and was slightly adherent to the stomach and duodenum. These adhesions, which were filmy and avascular, were separated and the site of the common duct exposed. The exposure was difficult owing to the enlargement of the liver and the limited space in a child of this age. All that could be found representing the common duct was a definite fibrous band in which no lumen could be discovered. The portal vein and hepatic artery were located in their normal position. The head of the pancreas was normal and nothing abnormal could be felt in the region of the hepatic ducts. The lymphatic glands behind the duodenum were enlarged but soft. The gall bladder was opened and about eight cubic centimetres (two fluid drachms) of concentrated bile were evacuated. An attempt was then made to trace out the cystic duct to its junction with the hepatic duct, but at this stage the anaesthetist warned us that the patient was feeling the effects of our manipulations. As the cystic duct was apparently functioning a cholecystoduodenostomy was performed as rapidly as possible.

On opening the duodenum we were astonished to see what appeared to be a little bile-stained fluid, but owing to the boy's condition we could not investigate this nor examine the ampulla of Vater.

Convalescence was satisfactory except that the patient passed a tarry motion on the seventh day. The jaundice disappeared slowly and had completely disappeared within five weeks. We have found no satisfactory explanation of the pathology. At the operation we were convinced that the fibrous band was the remains of the common duct, although the apparent bile in the duodenum casts some doubt on this. The boy was last seen seven months after his operation. He was well nourished. There was no jaundice. The faeces were normal. No bile could be detected in the urine. A second l  vulose tolerance test carried out three months after his operation revealed a normal curve. The liver remained enlarged for some months, but is now no longer palpable.

FULMINATING FRONTAL SINUSITIS AND ORBITAL CELLULITIS.

By R. E. BUCKINGHAM, M.B., Ch.M. (Sydney),
F.R.C.S. (Edinburgh), D.L.O.,
Orange, New South Wales.

J.W.M. was first seen on November 11, 1930, complaining of acute pain and tenderness of the left frontal sinus, with proptosis of the left eye, which was fixed, there being no action of the recti muscles. Dr. Clifford Colvin saw the eye in consultation and we agreed that the eye condition was secondary to some nasal infection.

Examination of the nose revealed that the left mid-turbinate bone was very o  dematous, but no pus was seen. An operation was performed immediately and the anterior end of the mid-turbinate on the left side was removed, and inhalations and fomentos to the eye were ordered to be given every two hours.

The next morning the patient's condition was much worse. The temperature was 37.8   C. (100   F.) and the pulse rate 100, the eye was very fixed and the conjunctiva chemotic. The patient was almost unconscious.

An external operation was now performed, the incision along the left eyebrow commencing at the junction of the inner one-third and lateral two-thirds and continued downward over the nasal bone and ascending process of the maxilla. The periosteum was elevated and the eye pushed laterally. An oblong piece of bone was now cut out of the ascending process of the maxilla and the ethmoids were cleared out. These cells contained granulation tissue, but no pus was seen.

A small circle of bone was then removed from the floor of the frontal sinus and some polypoid mucous membrane removed from the interior. No pus was seen. The ostium of the sinus was then enlarged with a frontal sinus rasp and the nasal bone between the frontal sinus opening and the opening in the ascending process of the maxilla was removed.

A tube was put in from the nose to the frontal sinus, and a second tube at the bottom of the incision.

After-treatment consisted of syringing through the nasal tube twice daily with a half strength "Eusol" solution. The tube at the lower end of the incision was removed on the fourth day and the nasal tube on the sixth day. The external wound healed by first intention and the patient was discharged on the sixteenth day.

There was a transient diplopia for four days and the eye rapidly returned to normal.

CORONARY THROMBOSIS ASSOCIATED WITH VENOUS THROMBOSIS.

By ARTHUR WATKINS, M.B., B.S. (Melbourne),
Roseville, New South Wales.

I WAS summoned to a Mrs. S., aged fifty years, who had collapsed in the street whilst boarding a tram car. Whilst just about to board the tram she had felt giddy and had vomited and had been attacked by epigastric pain.

Her pulse was feeble and rapid; she had an ashy pallor and was in great distress with pain of great severity under the left breast, radiating up to the left shoulder and then down the arm to the finger tips. There was no cardiac bruit to be heard on auscultation. There was no tenderness over the fourth dorsal vertebra nor over the sterno-mastoid muscle. I at once gave a mixture of aromatic ammonia and spirits of ether and chloroform. I administered morphine hypodermically in a dose of 0.015 gramme (one-quarter grain).

There was no thickening of the arteries nor increase of blood pressure. I diagnosed coronary thrombosis.

Within twenty-four hours she was much easier; a slight mitral systolic murmur was now present and a friction rub could be heard over the precordium. The left foot was o  dematous. I then gave a digitalis mixture and the patient quite recovered within seven days.

Two weeks later, whilst lifting a heavy chair, she felt cold all over, vomited and had an attack of pain similar to, but not so severe as the original attack. With the aid of an injection of morphine and a digitalis mixture and a gastric sedative she became well again within seven days. No cardiac bruit was present.

Fourteen days later I was called again to see her as her leg was painful. I found a superficial thrombosis present in the veins of the calf of the leg, but her cardiac condition was excellent.

I thought the venous thrombosis of great interest in connexion with the coronary condition above described and thought the case of interest as pointing out the diagnosis from "indigestion" and the exhibition of cardiac "whips" and morphine as a successful empirical treatment.

Reviews.

RESTLESS REFLECTIONS.

"AFTER CONSULTING HOURS," by Dr. Christopher Howard, is a *pot pourri* of the conclusions of a medical man of wide experience.¹ But after the fashion of the once popular broadcasting item, "Musical Switches," in which one melody passes into another, he follows from this to that in the wake of his idea associations. In the first twenty-four pages he touches on a dozen themes. The effect is not restless. Chapter II, "Some General Reflections," deals with alcohol (including what to drink in the United States of America), food, constipation and sun-baking and brings us, not unexpectedly, to "Some Sexual Reflections" in Chapter III. These are fully abreast of the times. He would have aided abortion at option and a *bidet* in every bathroom. Chapters IV and V contain "Reflections on Therapeutics and Appendicitis," but we hurried through these to get to Chapter VI—"Some Circumcisional Reflections," with its Biblical references. Chapter VII, "Some Mixed Reflections," and Chapter VIII, "Some Terminal Reflections," could both have been included under earlier headings. The latter deals with cancer and death.

There is no consolation in Dr. Howard's reflections. Apparently we are the creatures, for weal or woe, of our internal secretions. The flowers brought to the sick in hospital might, like the alabaster box, "have been sold for many pence and given to the poor." Death, at worst, will be an end of "*fin de la maison*"; at best, an escape from the certain ills of life. And so to bed.

ANTHROPOLOGY.

THE Australian aboriginal is unfortunately rapidly dying out. Nevertheless, a number of medical men and their friends live in parts of this continent where some of the original inhabitants are still to be seen. As the Australian aboriginal is one of the most interesting in the world, "An Introduction to Physical Anthropology"² may be a welcome addition to the library shelves of those who would like to probe deeper into the study of primitive man.

Dr. E. P. Stibbe has prepared this little work with the idea of supplying some technical knowledge to those who are interested in the subject, but are not by training professional anthropologists. The book is intended to provide an introductory course for university students preparing for degree examinations, as for those of the Bachelor of Arts and Bachelor of Science of London University. Professor Elliot Smith has advised the author and his teaching is reflected at many points.

The book is divided into three parts. The first, zoological, deals with the anatomy of the man-like apes and man, and with the evolution of man. The general anatomical features are dealt with. The evolution of the brain and the skull is discussed and then the chief features of the skeleton. A good grasp is thus obtained of the main points of resemblance and of difference between man and those living beings most closely related to him. In the discussion of the evolution of man it is pointed out that the relative primitiveness of the primates accounts for their supremacy. Examples are continually turning up, even under our noses, showing that high specialization often seals the possibility of further evolution, and with a change of environment may lead to extinction of the species which is unable to adapt itself to the new conditions.

Part II deals with the palaeontological aspect. The various climatic changes are referred to and their influence on the distribution of man. The industries of prehistoric man are considered and the various types of stone implements illustrated. Examples of fossil primates and man

are briefly described and the progress of evolution demonstrated by figures of various famous fossil skulls.

Part III deals with the classification and distribution of living man. The various racial characteristics are discussed, such as the hair, the skin colour, the shapes of the head, of the face and of the nose, the eyes, the mouth and lips, and stature. Under the latter the Australian natives are said to be "very short." This is by no means necessarily the case, as many are average size and some are tall. The chief features of the various races are summarized and then are contrasted the Mediterranean or brown race, the Alpine race, the Nordic race, the Mongolian race, the Negroid race and the Australoid race. Then follows a chapter on the practical study of skulls, followed by one contrasting an Australian aboriginal skull with a European skull, and, finally, a chapter dealing with the examination of the living subject. A glossary of terms concludes the work.

We feel sure that a little book of this kind published at a reasonable price will be welcomed by many who take an intelligent interest in Australian natives and who have probably found difficulty in knowing how to develop their interest along scientific lines.

THE POTENTIALITIES OF THE SOYA BEAN.

UNDER the title "The Soya Bean and the New Soya Flour" C. J. Ferrée has given a comprehensive account of the cultivation and economic possibilities of the soya bean.¹ A remarkable feature of the bean is its high protein and fat content. This protein and fat content is, according to competent investigators, eminently suitable for human assimilation and can replace similar animal components. Apart from human consumption the beans have considerable value as oil cake which serves as fodder. In addition, soya oil is used for technical purposes in the manufacture of soap and paint. The oil is also suitable for the manufacture of margarine.

In view of the great value of the soya, protein from the biochemical aspect, it is not surprising that in the east the soya bean has to a great extent replaced the animal proteins necessary for nutrition. The chief obstacle to its use as a staple food by western nations has been the difficulty of producing a palatable product. Its high fat content tends to the development of rancidity and hitherto measures to deal with this have interfered with its nutritive value. Recently a method has been evolved by Berczeller which insures the production of a palatable and highly nutritious soya flour. The composition of the flour is given as follows: Protein 42%, fat 20%, carbohydrate 24%.

From various data given by the author the cultivation of the soya bean would appear to be well worthy of consideration by western nations. Apparently there is a steadily increasing market for the bean. Amongst other countries Australia is mentioned as being suitable for the cultivation of the soya bean. It is stated that experiments carried out in Victoria and Queensland relative to the growing of the crop as an oil seed have been quite successful. According to the Victorian Agricultural Department, this is not quite in accordance with the facts. In Victoria its habitat is practically confined to the maize belt in east Gippsland. Tests made in New South Wales indicate that the crop has some value as hay.

Admitting that the new soya flour has all the advantages claimed for it by the author, it must be realized that its production entails a patent process, details of which are not given. However, if there were any possibility of the bean being successfully cultivated on a large scale in Australia, it would seem worth while considering the manufacture of soya flour.

In a later chapter the author gives details of how the flour may be advantageously introduced into domestic cooking. A section dealing with its use in diabetic dietaries might well be omitted, as clearly the author has not grasped the essentials of such diets and misleading information might be conveyed to diabetic patients.

¹ "After Consulting Hours," by Christopher Howard, M.R.C.S., L.R.C.P.; 1930. London: William Heinemann (Medical Books) Limited. Crown 8vo., pp. 212. Price: 7s. 6d. net.

² "An Introduction to Physical Anthropology," by E. P. Stibbe, F.R.C.S.; 1930. London: Edward Arnold & Company. Demy 8vo., pp. 208, with illustrations. Price: 12s. 6d. net.

¹ "The Soya Bean and the New Soya Flour," by C. J. Ferrée; 1929. London: William Heinemann (Medical Books) Limited. Foolscap 4to., pp. 90, with illustrations. Price: 6s. net.

The Medical Journal of Australia

SATURDAY, FEBRUARY 14, 1931.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

CLINICAL RECORDS.

If the American College of Surgeons achieved nothing else by its efforts at hospital standardization, it rendered an enormous service to medicine by its insistence on the keeping of adequate hospital records. This requirement is one of several that are set out as comprising the "minimum standard" to be attained by hospitals in America before they can be graded as first class institutions. Although this question has been referred to from time to time in this journal and although some of the larger teaching hospitals in Australia have taken steps to improve their records, the habit of taking, collating and filing clinical histories has by no means become universal in hospitals and has been neglected by many medical practitioners. The requirements of the *Workers' Compensation Acts* in the several States have made not a few men realize the importance of note taking, but many cease taking notes when they cease dealing with compensation cases.

A complete case record may be described as being one which includes the personal history, the facts discovered on physical examination, with the pathological and radiological findings when these methods of examination have been necessary, the working diagnosis, the details of treatment, the progress, the condition of the patient on discharge

with the final diagnosis and, when death has occurred, the findings on *post mortem* examination. The primary object of a hospital is the care and treatment of persons who are afflicted with disease or who stand in need of medical advice for other reasons. It is necessary that a record be kept of the course of a patient's illness in case he should have occasion to seek admission for a similar or an entirely different illness at a later date. A hospital is also—and this fact must continually be emphasized—an essential factor in preventive medicine and medical research. All preventive measures must be founded on an accurate knowledge of past happenings. Without this knowledge it would be impossible either to outline preventive measures or to assess their value at a later date. As far as research in general is concerned, it is doubtful how far hospital records may be useful. At the same time it is scarcely necessary to point out that every investigator must take cognizance of what has gone before. An individual case report may seem but a trifle, something not worth bothering about. Clinical experience, however, is made up of a series of events, sometimes trifling events. These must be recorded in such a way that they are not buried in a tomb of confusion, never to be discovered. Would-be writers of papers on clinical subjects can speak feelingly of the hopelessness of trying to dig out facts from the jumble of ill-kept hospital records. What is true of hospital practice in this regard must also be true of private practice. Looking at the question from the work-a-day point of view, the medical practitioner must realize that he may need the details of an illness when a patient visits him at a later date on account of some other illness. Further, an illness which begins in an ordinary way, may develop later into an unusual and complicated condition for the elucidation of which unrecorded facts may be essential. Finally, every medical practitioner if he is wise takes stock of his experience from time to time and he cannot do this if he is not in possession of what business people call stock cards.

Improvement in the matter of keeping records should be looked for both in hospital and private

practice. As far as hospital practice is concerned, the matter is one for the honorary staff. The staffs of many large hospitals are in the habit of holding regular meetings. At some of these meetings clinical cases are discussed. It should not be very difficult to insist on the establishment of a suitable system or on the improvement of existing systems. Hospital Boards must be made to realize that the reputation of their institutions depend on the standard of the work done within their walls more than on any other factor and that this reputation will be enhanced by the availability for reference of the record of achievement. For the private medical practitioner the essential is the will to do what is necessary. In these days of card systems for quick filing the rest will be easy. This subject cannot be left without reference to the fact that even the best of records are useless if they are stacked in pigeon holes and forgotten. Both single case reports on which others may build, and analyses of series of cases should be published. To neglect this is to fail in obvious duty.

Current Comment.

HARMFUL EFFECTS OF IRRADIATION.

THE years which have passed since von Röntgen's momentous discovery have seen great advances in many branches of medicine. A great factor in these advances has been X rays. X rays have proved of incalculable worth in diagnosis and by their use many of the body's secrets have been revealed. Within recent years, while more and more has been learned about their physiological effects and constantly increasing technical knowledge has made possible a harnessing and more efficient control of their forces, the value of X rays in therapeutics has become greater and greater. The advances with regard to radium perhaps have not been quite so rapid, but a recently awakened world-wide interest in cancer has led to a revival of the study of this substance and its action. Now only is it being generally realized that the therapeutic value of radium is very great. Almost daily some new therapeutic achievement is placed to the credit of radium; it seems probable that its use will be greatly extended and, as technical difficulties are vanquished, it may become an agent of inestimable value in treatment. But there is another side to the picture. Harmful effects of X rays and radium were observed almost immediately after their discovery in the "eighteen-nineties" and have been observed and

reported from time to time since. Within more recent years new methods of administration have led to the manifestation of hitherto unknown effects. In a recent interesting and valuable paper Humphrey Rolleston reviews the literature on the subject of the harmful effects of irradiation by X rays and radium and critically discusses the problem.¹

As far as is known at present, radium and X rays have practically identical effects upon the tissues and metabolism. Rolleston therefore discusses the activities of both under the one heading, "Irradiation." Perhaps this is open to objection, as so much yet remains to be learned concerning both of them.

In discussing the effects of irradiation on normal cells Rolleston points out that two factors are involved, namely, the character and dose of the irradiation and the radio-sensitiveness of the cells. The problem is thus complicated, as both physical and biological questions are involved. The question as to whether irradiation in small doses may stimulate tissue activity is a much debated one. In some instances investigators appear to have failed to take into account the possible variability in the physical and biological factors. Moppett in 1925 clearly demonstrated that variability in the physical factor may cause variability in the results; he found that the response of the cells of the chorio-allantoic membrane of the egg varies greatly according to the quality of the rays employed. He observed such widely different effects as atrophy, stimulation, hyperplasia and fibrosis. The radio-sensitiveness of cells is said to depend on the nature of the cells and the state of their nutrition and activity. The undifferentiated cells are the more radio-sensitive. Though evidence on the point appears to be anomalous, it may be taken as a general, but not an invariable rule, that malnutrition increases the radio-sensitivity of the cell. Rolleston remarks that previous damage, as by former irradiation, renders the cell more sensitive, but may not this phenomenon be rather of an anaphylactic nature quite apart from any possible previous damage? Desjardins concludes that stimulation of the normal cell activity is of a temporary nature only and is always followed by deterioration. Rolleston regards this as probably correct, but recognizes that such deterioration need not necessarily be regarded as permanent.

Far more important than the stimulation of normal tissues by irradiation is the possibility of the stimulation of cancer cells. Numerous observers have declared that this does occur. Sampson Handley states that small doses of radium stimulate cell activity and mitosis; he has shown that cancer spreads peripherally when treated centrally by radium implantation, but that its extension is prevented by encircling the growth with a ring of radium tubes. Other observers declare that the histological changes in a carcinoma after irradiation

¹ The Quarterly Journal of Medicine, October, 1930.

tion are always degenerative. There still exists a diversity of opinion on this important matter. Rolleston concludes that the existence of a stimulating effect of irradiation on malignant growths cannot be regarded as established.

It has been shown that irradiation of rats and mice may result in impaired development or abnormality of their progeny and that such defect may be transmitted, according to Mendelian laws, through many generations. There is, of course, no clinical data comparable to this experimental evidence, but it has been definitely shown that irradiation of a woman's pelvis during early pregnancy is apt to cause death of the fetus and abortion or certain defects such as subnormal mentality or even microcephaly. It has even been said that the fetus may be deleteriously affected by irradiation of the mother's pelvis before pregnancy. Irradiation during the later months of pregnancy may apparently result in retarded development and tardy growth of the offspring. Thus there may be danger in the application of X rays in the diagnosis of pregnancy; the practice of irradiation for the purpose of producing temporary sterility cannot be too strongly condemned.

Symptoms of acute constitutional disorder sometimes follow deep irradiation. The illness may be mild or so severe as to cause death. Malaise, nausea, vomiting, diarrhoea, fever, prostration, cardiac failure *et cetera* may occur. Constitutional symptoms after deep radium implantation are not usually so severe as those resulting from deep X irradiation. Opinions differ concerning the cause of symptoms. The presence of ozone and nitrous acid in the vitiated atmosphere of the X ray room, high electrical charging of the patient's body, haemolysis, shock, psychological factors, have all been suggested. The vitiated atmosphere theory can be disposed of by the observation that workers in chemical laboratories where nitrous acid fumes are in a much higher proportion than in the X ray room, do not become affected with symptoms comparable to those induced by irradiation. An argument against the electrification theory is provided by the fact that deep implantations of radium may cause symptoms similar to those produced by X rays. One of the likely causes of the constitutional disturbance is cell destruction with resulting liberation of substances which exert a toxic action on the tissues. The cells concerned are most frequently those of the intestinal mucosa, though Rolleston points out that irradiation of head, neck and chest has been shown to be responsible for the occurrence of symptoms at various times. It is of interest to note that Whipple and his coworkers found that though extensive irradiation of the thoraces of laboratory animals destroyed almost completely the red marrow of the ribs, it led to no constitutional disturbance, whereas irradiation of the abdomen was followed by severe constitutional symptoms; the intestinal mucosa was not affected by a severe inflammatory reaction such as might result from bacterial invasion. Both alkalosis and acidosis have been

suggested as having some aetiological significance. Rolleston remarks that these opposing views may be indicative either of a dual causation or of very diverse changes in metabolism at different stages of irradiation sickness. Rolleston does not think that the constitutional disturbance of irradiation is due to anaphylaxis; he remarks that an obvious objection to the anaphylaxis theory is provided by the occurrence of symptoms after only one irradiation. Probably the process concerned in the production of irradiation sickness is more complicated than any single theory as yet put forward. Flaskamp suggests that, in addition to intoxication by the products of cell disintegration, there may be deleterious effects from the direct action of the rays on the autonomic nervous system and the endocrine glands.

There is some confusion regarding the effect of irradiation on the blood and the blood-forming organs. Leucopenia with a relative lymphocytosis is sometimes observed among X ray and radium workers. On the other hand some investigators have declared that irradiation in small doses may have a stimulating effect; certainly leucæmia has occurred among X ray workers, but Rolleston expresses the opinion that it is coincidental with, rather than a result of, irradiation. Rolleston briefly discusses poisoning due to swallowing radium. This remarkable condition is associated with profound changes in the blood, but it is scarcely comparable to the harmful effects of irradiation normally administered.

Irradiation dermatitis and its sequelæ are discussed, but these are too well known to require more than brief mention. X ray dermatitis is especially apt to be followed by the development of malignant disease; partly on this account Rolleston draws an analogy between it and *xeroderma pigmentosa*. It is worthy of note that in man squamous celled carcinoma is the type of malignant disease most likely to follow X ray dermatitis or the injudicious use of X rays; the occurrence of sarcoma has been reported in few instances. Laboratory animals are more likely to be affected with sarcoma.

There can be no doubt that irradiation may effect permanent changes in the viscera; the sterilization of people exposed unduly to X rays is sufficient proof of this. Chronic nephritis, the result of X irradiation, has been produced experimentally and observed clinically. Warthin noted the presence of large deposits of lime salts in the tubules of the kidneys; Rolleston suggests that this may have been due to mobilization of calcium from irradiated bones. Thus, he remarks, the damage to an organ need not be solely due to local irradiation. There are in the literature many other references to the effects of irradiation on various organs.

The foregoing is merely a sketchy discussion of Rolleston's paper, but perhaps sufficient has been written to indicate that the effects of irradiation on the human body make a very broad field for study and that little more than the fringe has yet been explored.

Abstracts from Current Medical Literature.

MEDICINE.

The Senile Testis.

B. P. WIESENER (*Edinburgh Medical Journal*, April, 1930) describes experiments on the reactivation of the senile testis of the rat by injections of gonadotrope hormones. Four rats, aged about two years, were tested and found to be sterile; laparotomy was performed and the testes found to be small and to contain no secretion and few spermatozoa. One testis was removed and preserved in each case. Daily injections of 0.2 cubic centimetre of extract 83BA were given for ten days. The rats were then killed and the remaining testis was compared with the testis previously removed. In each case a definite increase in weight of the retained testis was noted, much secretion was present and spermatogenesis was well marked. Inactive testes had therefore been rendered active by these injections. The substance injected (extract 83BA) was an extract from human placenta, the proteins of which had been removed by means of sulpho-salicylic acid. This extract contains gonadotropic hormones which are also found in the anterior lobe of the pituitary body; either one or both of these hormones must have produced the effect on the testis in these rats. To exclude the possibility of compensatory hypertrophy of the testis which remained in the rat during treatment, unilateral castration was performed on two other rats and after eleven and twenty-three days respectively an examination of the testes was made. No evidence of compensatory hypertrophy of the testes was found.

Electrolysis from Dentures.

A. LIPPMANN (*Deutsche Medizinische Wochenschrift*, August 15, 1930) describes a case in which symptoms followed the use of dental plates of different metals, namely, gold in the upper plate and tin in the lower. From his investigations he showed that between the two metals an electrical current was generated which proved to be of a strength of 0.1 milli-ampere and a potential difference of 0.25 volt. The symptoms produced by this were nervous instability, disturbances of taste and a burning sensation in the tongue. The gradual ionization of the metals caused chronic toxemia. The author issues a warning against the possibility of this occurrence when different metals are used in the manufacture of dental plates. The reaction is more likely to occur when the oral secretions are very acid.

Diagnosis of Facial Paralysis.

R. WARTENBERG (*Klinische Wochenschrift*, August 23, 1930) describes a new test for the presence of facial paralysis. If the thumb be placed on the upper eyelid and the patient

endeavour to raise the eyelid, fine vibrations will be felt in the *orbicularis oculi* muscle. These tremors are most pronounced when the paralysis is of central origin and are completely absent when the cause is peripheral. He considers this sign is of great value in chronic paralysis as an indication of the progress made in the restoration of function; in some cases of cerebral tumour it is the first sign that the facial nerve has been affected.

Treatment of Morphinism.

G. ANTON AND J. JACOBI (*Klinische Wochenschrift*, August 16, 1930) state that in morphine addicts as well as in animals subjected to the drug the renal threshold for sugar is greatly lowered. From their experimental work, associated with treatment in several cases, they are of the opinion that morphinism is best treated by the injection of ten units of insulin combined with fifty grammes of glucose by mouth three times a day when the condition is severe, and less when it is milder. This treatment is repeated each day for a week and is often combined with sedatives. A second course is given eleven days later, when all symptoms have disappeared. The general condition always improves greatly and the patients can be allowed to resume their normal habits.

Lipodystrophy Following Insulin Injections.

R. PREISEL AND R. WAGNER (*Klinische Wochenschrift*, August 16, 1930) review the literature on localized fat necrosis in patients requiring continual administration of insulin. In a series of 109 cases they observed severe fat necrosis in two. On both occasions it occurred in children. The disappearance of fat around the injection areas is due to the action of the "Tricresol" used as a preservative in the manufacture of insulin. From a summary of the literature 10% of insulin patients develop this condition at periods varying from two months to two years and the incidence is higher in males than females. They conclude by advising frequent changes in the site of injection and the use of a concentrated form of insulin. Some people apparently have an idiosyncrasy for such injections and the appearance of such localized fat dystrophies cannot be avoided.

Treatment with Liver Extract.

W. P. MURPHY AND H. BRUGSCH (*Münchener Medizinische Wochenschrift*, September 5, 1930) state that as many reports of unsuccessful treatment of pernicious anemia with liver extract have been recorded, they were compelled carefully to review the literature and to restate the indications for such treatment. They present the details of forty-one patients who have been under regular control for periods varying from one to five years without recurrences. In a further series of seven cases in which treatment was intermittent, three recur-

rences were noted. While undoubtedly in some instances pernicious anemia is refractory, the real cause of failure in most instances is the intervention of some other complaint. They give the details of the history of a patient who had five relapses extending over nineteen years, the last in spite of liver treatment. The cause of death was Paget's disease with total heart block and generalized arteriosclerosis.

The Clinical Application of the Basal Metabolic Rate.

I. M. RABINOWITCH (*The Canadian Medical Association Journal*, August, 1930) discusses the pitfalls in the clinical application and interpretation of the basal metabolic rate. He states that the inappropriate use of tests and the improper interpretation of their results bring discredit upon otherwise valuable work. After referring to the history of the study of basal metabolism, the author discusses the principles upon which the test is based. It is his impression that the values in female adults are slightly too high. This fact should be taken into account in the diagnosis of myxœdema. Puberty may be marked by sudden increases of body growth and associated with evident changes of metabolism. The variation of *plus* or *minus* 10% allowed as normal accounts occasionally for an individual having definite signs and symptoms of hyperthyroidism and at the same time having what appears to be a normal basal metabolic rate. The importance of daily and even hourly fluctuations of the metabolism in certain types of persons is stressed. The metabolism of individuals with good muscular tone tends to be nearer the *plus* than the *minus* side of the normal limits allowed. The factor of muscular tone probably accounts for the low metabolic rate found in patients suffering from arthritis, for in this condition there is a tendency to the fixation of large masses of muscle. Body temperature must also be considered. For every degree (Fahrenheit) above the normal, the clinician should subtract about 7%. Following prolonged fever the basal metabolic rate may be lowered owing to the resulting exhaustion and malnutrition. Protein diet tends to raise the metabolic rate. Nervous factors also help to raise the basal metabolic rate. In the neurasthenic individual a basal metabolic rate of +15% does not necessarily indicate hyperthyroidism. On the other hand, the imperturbable, overweight type of individual may have a rate of -20% and still be normal. But should he develop hyperthyroidism, his rate of metabolism may increase 30% above his true basal rate and still, so far as the report shows, be within the upper limit of normality allowed, namely, +10%. An increased rate of metabolism is found prior to menstruation and also during the last four months of pregnancy and during lactation. At the menopause the metabolic rate tends to be low, probably due to lessened ovarian activity.

The first effect of X ray therapy is to increase the basal metabolic rate. Hence patients treated with X rays should not be sent for a test for at least a week after exposure to X rays. Increases of the rate of metabolism noted in heart disease are in general either due to increased respiratory effort or cyanosis. In conclusion the author pleads for intelligence in the interpretation of basal metabolic tests.

Diet in Gall Bladder Diseases.

MAX EINHORN (*Medical Journal and Record*, September 3, 1930) states that owing to better methods of diagnosis diseases of the gall bladder are more frequently recognized than formerly. The diet in these conditions has therefore gained in importance. Various writers have shown that in the majority of patients suffering from cholelithiasis hypercholesterinæmia is present. Therefore they have prescribed a fat-free diet. Such foods as butter, olive oil, eggs, cream, meat and fish were forbidden. The author does not approve of this diet, because cholesterol plays such an important part in the body economy and one cannot be sure that no harm will result from its exclusion. Further, a diet excluding all cholesterol-containing food is a very restricted one. No diet will prevent the formation of gall stones. The only method of influencing gall bladder affections beneficially is to create a greater flow of bile. Experiments have shown that fats and eggs do this. The author recommends that meals should be ingested frequently to insure emptying of the gall bladder. The meals should consist of mixtures of the three principal nutritive materials (proteins, carbohydrates, fats) in the correct proportions. Excesses in the quantity of food, also too luxurious meals, should be carefully avoided. Likewise too much spice, too much beer or wine are to be guarded against. A daily evacuation of the bowels should be secured. Exercise short of fatigue should be indulged in. The fluid intake should be increased. Patients affected with jaundice should be given fats only in moderation. The diet should consist of skimmed milk, wheat bread, oatmeal, sugar, some fresh fruit and a green vegetable. A little later an egg may be added. Pancreatic ferments may be added to aid digestion.

Arthritis.

R. PEMBERTON (*Journal of Laboratory and Clinical Medicine*, August, 1930) discusses the present state of the problem of arthritis. He points out the necessity for recognizing the difference between hypertrophic and atrophic arthritis, the influence of heredity and the defective circulation about the joints. X ray studies have shown that elongation, tortuosity, widening and inertia of the colon often precede or accompany arthritis. Colonic lavage has here its rationale. Heat, massage, exercise and the administration of aspirin help to influence the sluggish circulation. There is a delayed rate of removal of

glucose and a slightly lowered basal metabolism in many cases of arthritis. A diet containing ample protein and vitamins, and not too rich in carbohydrates, helps the body to deal with these defects. Infection is mainly superimposed on the conditions alluded to and is not necessarily the primary cause of arthritis.

The Allergic Joint.

J. A. FREIBERG AND S. E. DORST (*Journal of Laboratory and Clinical Medicine*, August, 1930) discuss the diagnosis and treatment of the allergic joint. Experiments on rabbits led to the concepts mentioned. The joint, whether knee or finger, has slight or no periarticular infiltration, is distended with fluid and has a boggy feel; function is moderately limited. Pain is rarely severe; aspiration of the joint reveals a straw-coloured fluid; it is only useful to exclude specific arthritis. The diagnosis of the allergic joint is only made after positive intradermal reactions have resulted from the injection of an autogenous vaccine and improvement or cure has followed treatment. Cultures are made from post-nasal secretions, from material obtained by sinus puncture from infected teeth, from tonsils, from feces and from material obtained by suction from the ethmoid region. The organisms present are isolated in pure culture, killed and injected intradermally. Sensitivity is shown by redness, induration and local heat. This reaction reaches its height in 24 to 36 hours and subsides slowly. A focal reaction in the affected joint often occurs. For treatment a vaccine is prepared, including all those organisms which have caused a reaction. A very small dose of vaccine is used—0.03 cubic centimetre (half a minim); the dose is increased every day or every second day by 0.03 cubic centimetre (half a minim). Severe reactions are to be avoided; the dose of vaccine is often not increased above 0.12 cubic centimetre (two minims). The organisms which produce reactions are most commonly found in the upper respiratory tract or the colon; they are frequently organisms which are usually regarded as non-pathogenic, such as Friedländer's bacillus or a strain of *Bacillus coli*.

Artificial Pneumothorax.

E. RIST (*Revue de la Tuberculose*, October, 1930) discusses factors which aid in a decision as to the appropriate moment to abandon the artificial pneumothorax treatment of unilateral pulmonary tuberculosis. From a survey of one hundred and eighty-nine patients treated by collapse therapy, taken from seven to nine years afterwards, it was found that all deaths had occurred within five years after the commencement of the treatment, no less than sixty of the seventy-three deaths occurring within two years. From this the author deduces that five years is the optimum period for maintaining collapse of the lung. He admits, however, that economic, psychological and other factors enter. For

instance, a workman whose employer objects to giving time off, should not risk losing his employment. He insists that pneumothorax should be continued in a woman through pregnancy, which he considers should only be permitted two years after all expectoration has ceased. He objects very strongly to the practice of some physicians who cease collapse treatment at the end of twelve months. The majority of patients treated thus relapse and die. Nevertheless, it happens not seldom that the pneumothorax becomes obliterated despite all efforts, whether from effusion or independently of it, within a few months. Often the reparative process initiated by the collapse continues and proceeds to arrest of the disease. Next to the time factor he considers that the most important indication of arrest is the permanent disappearance from the sputum of tubercle bacilli. This should be tested by two guinea-pig inoculations with an interval of six months. From the symptomatic point of view indications of arrest of the disease, and thus for the omission of collapse, are the general state of the patient, his capacity for work and resistance to fatigue. The author shows that herein lies a great advantage of pneumothorax treatment, in that the patient may return to a normal existence and active work long before cessation of treatment and that for a definite period of time his reactions to his environment can be watched and proof can be obtained of his resistance before the artificial pneumothorax is abandoned.

Non-Specific Therapy.

J. I. MILLER (*Journal of the American Medical Association*, August 16, 1930) discusses the present status of non-specific therapy. All the agents used for this type of treatment have the common property of being able to cause a febrile reaction. Lupus and anthrax in animals have been cured by injections of streptococci. The mental condition of persons affected with various psychoses has often improved following an acute infection, such as typhoid fever, measles or pneumonia. The best effects of protein therapy are obtained in the treatment of acute polyarthritis, in which condition 25% of patients are cured and 25% promptly relieved of their discomfort. If the patient shows a good response to the first two reactions the treatment should be continued at intervals of two days until five doses have been given. If no improvement is noted after two good reactions the treatment should be discontinued. In the early stages of chronic atrophic arthritis in which there is pronounced evidence of inflammation, non-specific protein therapy will sometimes give good results. In *thrombo-angiitis obliterans* early protein therapy may have a markedly beneficial effect. *Dementia paralytica* is now universally treated by means of malarial infestation; multiple sclerosis has been treated with malaria and with intravenous injections of typhoid vaccine, with reputed benefit.

Special Articles on Diagnosis.

(Contributed by Request.)

XXXII.

THE EPILEPSIES.

FROM the mists of medical antiquity epilepsy emerged as the sacred disease and maintained an exalted aetiology until Hippocrates declared that it had a "natural cause from which it originates like other affections." To discover the "natural cause" in this bold asseveration of belief has been the task of succeeding generations of physicians for the last twenty centuries. The problem is still unsolved. For, even in the light of extensive research and with a wealth of clinical observation we can but say with its most distinguished modern investigator that its aetiology is heterogeneous, its semelology indeterminate, its pathology dubious, its pathogenesis conjectural and its therapeutics empirical. For this reason it would be easier to write a book about epilepsy than to endeavour to concentrate the manifold theories and mass of research work into the space of an article. The following attempt is therefore necessarily selective and admittedly incomplete and sketchy.

There is a growing doubt in the minds of modern neurologists as to whether there actually exists such a disease entity as epilepsy, since its outstanding features—periodic disturbances of consciousness with or without convulsions—are known to occur as symptoms of divers and definite pathological states. Alterations of the cerebral circulation of cardiac origin in Stokes-Adams's disease no less than the endogenous toxins of eclampsia and uræmia, for example, may produce epileptic phenomena indistinguishable from those of the so-called and venerable "essential" or "idiopathic" epilepsy, wherein the nature of the pathological process is unknown. Then, again, clinical investigation has revealed proof that there are many types of epileptic reaction, that the classical major seizure with its tonic and clonic episodes may be replaced even in the same patient by other less dramatic yet none the less characteristic manifestations. In fact, the many varieties of the epileptic reaction appear to shade off from the gross excito-motor disturbances of *grand mal* to the "affect-epilepsies" of Bratz and Leubuscher and the psychical equivalents, the only symptoms of which are reflected as disturbances at the symbolic level. For these and similar reasons epilepsy as formerly understood is now regarded as occurring as a symptom of certain known pathological states and, where these have not been definitely determined, as a syndrome with a varied aetiology. Hence in striving after greater nosological accuracy we speak of "the epilepsies" rather than of "epilepsy" itself.

Apart from Jacksonian epilepsy and the convulsions which form the symptoms of other known diseases, the older clinical teachers recognized epilepsy as occurring in two forms, *grand mal* and *petit mal*, the latter being merely a periodic obscuration or loss of consciousness in which the patient had no convulsion and did not necessarily fall; they postulated many theories of causation and made repeated efforts to establish an exact cerebral pathology. Such endeavours, within the last decade, have led to a more comprehensive knowledge of the nature of the epilepsies and have gone far to establish the pathology underlying both the convulsive phenomena and the disturbances of consciousness. It has been found possible to extend the conception of the epilepsies to include the various epileptic variants the symptoms of which, though apparently disparate, are basically similar; and bring into the same clinical category such conditions as pyknolepsy and narcolepsy.

It would be out of place here to detail the many theories which have passed in and out of medical currency regarding the causation of epilepsy, especially in view of the lack of unanimity among neurologists and the agnostic attitude which so many have adopted in the face of this still unsettled problem. Likewise it is impossible in this limited space to do more than make passing reference to the

brilliant research work which has recently illuminated our understanding of the possible mechanism of convulsions; to the investigations of Weed and his coworkers on the factors surrounding intracranial pressure and the cerebro-spinal circulation; to the work of Lennox and Cobb on the relation of disturbances of the acid-base equilibrium to epileptic seizures; to the researches of Gamble into the water metabolism of cerebral tissues; and to the work of Winkelman and Fay on the pathology of the Pacchionian bodies and the production of supracortical oedema. But the conclusion of Kinnier Wilson who has lately given what is perhaps the most concise and yet comprehensive statement of the problem may be fittingly quoted: "The essence of all epileptic semelology, major or minor, pre-seizure or post-seizure, psychical or visceral, is neuronc derangement and that this derangement is of neuronc derivation. Nervous tissue can be, and is often enough, influenced by mechanical, vascular and humoral agencies; but the secret of epilepsy—the core of the problem—resides in the qualities of the neural mechanisms exhibiting discharge."

In times anterior to our own it was the common clinical practice to separate the epilepsies of later life which were dependent upon the action of toxins, gross vascular or neoplastic changes within the nervous system, from the epilepsies commencing in childhood or early adult life in which there appeared to be no provoking cerebral lesion. This classification, in the light of recent knowledge which points to a definite pathology embracing tissue oedema and the shift of the acid-base equilibrium, is purely arbitrary; but it still retains some usefulness from the diagnostic standpoint.

Epilepsy a Symptom of Cerebral or General Disease.

Epilepsy is a symptom—sometimes a prominent symptom and sometimes only a minor accompaniment to other more typical symptoms—of a very large number of pathological cerebral states, in which it may assume the characteristics of a generalized convulsion or involve only a localized muscular group as in the true Jacksonian type. It may develop early and prominently in certain types of neurosyphilis; it is frequently seen in cases of cerebral arteriosclerosis. It may emerge in meningitis of infective origin and is often among the symptoms of *pachymeningitis hæmorrhagica interna*. It is not infrequent in cerebral traumata and has been reported in cases of disseminated sclerosis. It may complicate the clinical picture in encephalitis. Combined with congenital mental defect, it occurs with hydrocephalus, with cerebral sclerosis and with tuberosc sclerosis in epilepsia.

Epilepsy is sometimes symptomatic of other organic lesions, as, for instance, with some cardiopathy such as the Stokes-Adams syndrome, with disease of the kidneys terminating in uræmia, with eclampsia and occasionally with the endocrinopathies. Acute infectious diseases may culminate an epileptic seizure; fits have occurred during a malarial paroxysm and in the hyperpyrexial states of influenza. Exogenous toxins are known to have precipitated major seizures. Lead, arsenic and strychnine have convulsed the human organism; so also have alcohol and carbon monoxide. In most of these cases, however, one is guided to a correct diagnosis by the presence of other signs and symptoms or by the history which precedes the convulsion. Quite a large number of morbid states in which epilepsy is known to be a possible symptom can be eliminated very easily and very quickly in the ordinary routine examination of the patient. Having eliminated the acute infectious diseases, the metallic poisons and other exogenous toxins, especially alcohol, it is decidedly rare to find epilepsy developing in any patient beyond the age of thirty with an intact nervous system. Complete neurological examination in such cases, combined with blood and cerebro-spinal fluid examination (the Wassermann test *et cetera*), will almost always yield other evidence of a pathological process of which epilepsy is merely one of the manifestations of morbid change in some part or parts of the neuraxis.

There remain for consideration the epilepsies which are not so obviously associated with gross cerebral lesions and

in the ætiology of which other bodily diseases seem to play no part.

The Epileptic Constitution.

Without discussing the pathology of mental disorder it should be obvious that epilepsy may be one of the symptoms of a morbid process which affects the various attributes of mind. While it is no doubt true that there are patients who have periodical attacks of major or minor epilepsy and who yet appear normal on physical and mental examination and who can for the most part carry on their work, the majority of epileptic patients have some mental disorder which may range from gross imbecility to a mere psychopathy. The association of epilepsy with mental defect is so well known that it need not be stressed, likewise the psychoses in which epilepsy is a prominent symptom are met with not infrequently in every psychiatric practice. But when there is neither gross mental defect nor palpable psychosis certain mental peculiarities appear to characterize the chronic epileptic and form what has been termed the "epileptic constitution," a knowledge of which may aid in diagnosis.

The epileptic's first thought is for himself. One of his chief concerns is the state of his health. He is frequently lazy and prevaricating and is essentially hypochondriacal. His interest in matters outside himself is shallow. He is usually sentimental and sanctimonious; his moods often vary in relation to his seizures. Thus he may for a time be irritable, suspicious and morose; when the fit is imminent he may become pugnacious and aggressive. Gradually, as his seizures continue, the horizon of his interests contracts progressively down upon his egocentricity. Sexual reactions are frequently infantile—autoerotic or exhibitionistic. Sooner or later in most chronic epileptics exhibiting major seizures, dementia supervenes and the last connexion with the outside world of men and affairs is severed.

The Epileptic Fit.

The Aura.

Many epileptic phenomena are preceded by a definite aura which, when present, may be sensory, motor or psychic and which, in the classical major fit, gives warning to the patient of the impending motor discharge. The commonest auras are hallucinatory disturbances such as flashes of light, visions or voices. Some are quite complicated, as, for instance, when the patient imagines that he is running to catch a tram and the moment he boards it he falls in a fit. Different auras occur in different patients but the same aura tends to recur in each individual patient. Tingling sensations are common precursors to Jacksonian fits; a variety of disagreeable epigastric sensations has been described by chronic epileptics. Olfactory auras (bad smells or perfumes) are common in the so-called uncinate epilepsy.

Apart from definite auras many epileptic patients become vaguely aware of an impending seizure some hours or days before it occurs. It is difficult to describe their feelings; but they are often reflected in the changed conduct of the patients themselves, giving rise to moodiness and querulousness in some and to undue pugnacity and psycho-motor restlessness in others.

The Classical Seizure.

Following the aura (if present) in the major fit the patient falls and in doing so may utter a cry associated with the tonic spasm which now supervenes accompanied by the complete obliteration of consciousness. After about thirty seconds this intense muscular tonicity is replaced by violent clonic spasms which gradually subside, shading off usually into coma. The patient may wake almost at once in a state of mild confusion with perhaps some automatic activity, or may proceed to sleep for several hours and awake without any memory of the seizure. The tongue is sometimes bitten and urine and feces may be passed during the motor phase of a fit.

In the minor seizures convulsive phenomena are usually absent or so mild as almost to escape notice. The fit consists of a momentary disturbance of consciousness which

is not usually accompanied by a fall. In *status epilepticus* the fits are serial and continuous and there is no return of consciousness between them. It is a condition frequently observed in the epileptic insane and as the terminal event in those whose epileptic reactions are of the major type.

Post-paroxysmal Phenomena.

The post-paroxysmal states of major epilepsy consist largely of variable degrees of confusion and amnesia. In a state of confusion, epileptic furor sometimes develops; the patient may become uncontrollably violent and in a state of frenzy attempt to commit insane acts of brutality. This phenomenon occasionally assumes medico-legal importance. It is closely allied to the condition known as post-epileptic automatism wherein the patient unconsciously carries out a series of automatic actions frequently related to some habitual exercise and, on regaining consciousness, has absolutely no memory of what he has done. Periods of automatism are commonly of short duration although there are many classical examples of people who have apparently "carried on" in an automatic state for days. Although occurring typically after a seizure, states of automatism sometimes replace the major seizure entirely.

The Epileptic Variants.

Our conception of the epilepsies has been broadened by the somewhat recent clinical recognition of a number of epileptic variants. These arise sometimes as disturbances of the stream of consciousness and sometimes as morbid reactions of isolated muscle groups or viscera. Kinnier Wilson, whose classification seems the most lucid, divides these epileptic variants into motor, sensory, psychic and visceral types.

The Motor Variants.

Of the motor variants five are recognized: Myoclonic or regional epilepsy, consisting of irregular twitching movements of a limb or limbs, to the study of which Muskens has devoted much research; *epilepsia partialis continua*, a rare condition described many years ago by Koshevnikow, consisting of practically continuous muscular twitchings of some peripheral segment of the body; tonic epilepsy, which is characterized by paroxysmal rigidity not followed by the clonic manifestations associated with major seizures; coordinate epilepsy, in which the patient's movements during the attack appear coordinated and purposeful; and inhibitory or akinetic epilepsy, in which the patient in apparent syncope seems to "fall dead," or, with retention of consciousness, a limb may assume a state of temporary paralysis.

The first two motor variants, myoclonic epilepsy and *epilepsia partialis continua*, probably include those conditions which were once regarded as rare and diagnosed as *paramyoclonus multiplex* or, when occurring with typical major epileptic seizures, as Unverricht's *myoclonus epilepticus*. It may be difficult to distinguish between *petit mal* and the motor variant called tonic epilepsy, as the latter is very often little more than an elaboration of the former. Coordinated epilepsy is similar to the actions of certain patients in a state of post-epileptic automatism, but occurring as a true variant, it often precedes or appears to initiate the major fit, or alternatively, may replace the classical seizure as an epileptic equivalent. The field of inhibitory epilepsy is a large one and difficult to explore since the phenomena so closely resemble other phenomena not hitherto thought to be epileptic. The most one can say at present is that definite cases of inhibitory epilepsy have been observed and that the similarity between such a condition and those of cataplexy, *lacheschlag*, certain types of trance and catalepsy, is much greater than the difference.

The Sensory Variants.

Of the sensory epileptic variants, reflex epilepsy signifies the production of an epileptic seizure by extrinsic specific sensory excitation; loud and unexpected sounds have been known to initiate a fit. Sensory epilepsy is a sensory

variant which includes the condition known by the older term of "uncinate epilepsy" and which consists of paroxysmal sensory disorders associated with olfactory hallucinations and subjective feelings of numbness or tingling. Affective epilepsy is a sensory variant which comes into such close contact with hysteria that the two may be indistinguishable. Emotional initiation is common to both, but the true affective epilepsy is regarded as comprising those cases in which a major seizure is precipitated by a definite emotional crisis.

The Psychical Variants.

The psychical variants form an ill-defined group of post-epileptic confusional conditions which usually occur in the absence of the major fit, such as "dreamy states," paroxysmal tantrums, ecstasies, vivid visual hallucinations, fugues and ambulatory automatisms. The transitory and episodic character of these disturbed psychic states brings them within the epileptic *genre*, either as incidents associated with the major seizure or as substitution phenomena.

The Visceral Variants.

There remains the heterogeneous group of paroxysmal visceral disturbances of epileptic origin, called originally by Gowers "vaso-vagal attacks," and now grouped as the visceral variants of epilepsy. The symptoms are very similar to those which comprise the syndrome of anxiety neurosis; palpitations, feelings of suffocation, hot flushes, trembling, nausea, sinking sensations in the epigastrium and a fear of impending disaster. There are many, no doubt, who will think that to include such attacks in the epileptic category is casting the neurological net too wide. At present there is sufficient uncertainty to justify scepticism. It is, of course, theoretically possible for the "neuronic derangement" responsible for epileptic phenomena relating to the higher centres to occur in the visceral centres also. But the subject has not really progressed beyond the speculative stage; while so many symptoms are common to narcolepsy, trance, inhibitory epilepsy and the anxiety states, a great amount of sorting out is necessary before one can arrive at an explicit classification in the lamentable absence of any accepted pathology.

Allied Conditions.

Pyknolepsy.

Very closely related to the accepted epileptic reactions is the somewhat rare condition which Max Meyer has called "pyknolepsy," an apparently self-limited disorder of childhood consisting of very mild *petit mal* attacks of great frequency. Attacks commence suddenly and without warning. Auras have never been observed. The patient's heredity is usually without taint. There is a momentary inhibition of mental activity without the muscular concomitants of major epilepsy. Such attacks may recur with tremendous frequency up to as many as one hundred in the day. They cease altogether at puberty and the patients have none of the mental deterioration common in genuine epileptics. They are quite uninfluenced by the exhibition of the usual anticonvulsant drugs. The aetiology of the condition is at present unknown.

Narcolepsy and Cataplexy.

The tendency to irresistible sleep has been regarded as a symptom of various pathological conditions within the nervous system. Like epilepsy, to which, as an inhibitory phenomenon, it is closely allied, it has been found to occur in patients without demonstrable pathological lesions. Combined with cataplexy (a paroxysmal loss of postural tone) narcolepsy has been upheld with more than plausible reasoning by some clinicians as a separate disease entity. Cataplexy is related to reflex epilepsy in that an attack is initiated by emotional disturbances, especially inordinate laughter or sudden anger, when the patient, while retaining full consciousness, falls to the ground and for a time lies flaccid and helpless. The narcoleptic syndrome has been observed in certain acute infective conditions of the central nervous system, in cases of cerebral traumata and cerebral neoplasm. It bears a remarkable relation to

lesions localized to the "pituitary 'tween-brain system" the anatomy of which is still somewhat umbrageous. Narcolepsy, cataplexy and some of the recognized epileptic variants are believed to be definitely inhibitory phenomena. If they are to be regarded as separate disease entities, until more is known about cerebral inhibition, it will remain difficult to determine where narcolepsy and cataplexy end and the inhibitory epileptic variants begin.

Hysteria.

One approaches the relationship between hysteria and epilepsy with almost unavoidable trepidation, conscious of the pitfalls which lurk in that psychological hinterland of theory and contentiousness and especially if one refuses to take cover in such nosological ambush as provided by the term "hystero-epilepsy." The temperamental peculiarities of epileptics are frequently of an hysterical nature. Apparent hysterical outbursts have been known to follow genuine epileptic convulsions and the generally stressed diagnostic points of differentiation are of little value. While it is often easy to distinguish an epileptic from an hysterical fit by the state of consciousness, the set sequence of movements, biting of the tongue and sphincter incontinence, the utmost difficulty may arise in endeavouring to differentiate between hysteria and one of the epileptic variants. Generally speaking, however, the movements of the hysteric are less orderly and without sequence, the attack is frequently more prolonged and consciousness less deeply disturbed. The deep reflexes are not abolished and the patient often responds to "firm handling." The character of the initial attack, if the history can be relied upon, may prove the deciding factor.

Conclusion.

Epilepsy, occurring in many varieties as symptoms of manifold morbid conditions within the human organism, holds perhaps the most prominent place in neurological semeiology. To diagnose an epileptic manifestation may be the easiest task in medicine or it may in other instances baffle the most experienced of clinicians. It is not enough, however, to have established the mere presence of some epileptic phenomenon and thereupon to place it proudly in some nosological niche; one must, if possible, discover the cause of such abnormal reaction in order to establish the correct diagnosis of the condition. It is scarcely necessary to state that this endeavour is in many cases fraught with peculiar difficulties arising out of our present ignorance of many aspects of cerebral function and the apparent absence of gross pathological concomitants. Yet to shelter behind the time-worn phrases "idiopathic epilepsy" or "essential epilepsy" is a confession of ignorance to which one should only resort when exhaustive clinical and pathological examination fails to yield other signs or symptoms of a lesion demonstratively causative, as the recent application of encephalography has revealed a hitherto hidden lesion operating in certain conditions which have in the past been set down as idiopathic epilepsy.

A knowledge of those diseases which may give rise to one or other of the epilepsies is essential for correct diagnosis. An endeavour to eliminate each of these *seriatim* should be made. A pertinent inquiry into the family history should be undertaken in every instance, nor can too much time be spent in investigating the conditions which led up to the initial seizure. Collateral evidence of the epileptic constitution may be a valuable help in a difficult diagnosis.

The word epilepsy still betrays its animistic origin. But in the light of recent research it is scarcely too bold a prediction to say that in the near future the diagnosis of the epilepsies will resolve itself into the diagnosis of those many morbid states which, through the interrelated reflexes of the nervous system, cause a disturbance of energy to become exteriorized at the sensori-motor and psychic levels.

REG. S. ELLERY, M.D. (Melbourne),

Neurologist to the Victorian Lunacy Department, Clinical Assistant to the Psychiatrist, Melbourne Hospital, Melbourne.

British Medical Association News.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected members of the Victorian Branch of the British Medical Association:

- Wright, Roy D., M.B., B.S., 1929 (Univ. Melbourne), Melbourne Hospital, Melbourne, C.I.
 Bannon, Edward Gregory, M.B., B.S., 1928 (Univ. Melbourne), 19, Beach Avenue, Elwood, S.3.
 Green, Arthur Ormond, M.B., B.S., 1928 (Univ. Melbourne), 18, Park Street, Burnley, E.1.
 Benham, Anthea Allison, M.B., B.S., 1930 (Univ. Melbourne), Mareeba Baby Hospital, Adelaide, South Australia.

Medical Practice.

WORKERS' COMPENSATION INSURANCE PRACTICE, NEW SOUTH WALES.¹

It would appear that many members of the medical profession have not yet familiarized themselves with those sections of the *Workers' Compensation Act, 1926-29*, of most concern to medical practitioners and that many of the disputes which have arisen between medical practitioners and insurers would have been avoided if the practitioners concerned had had a fuller understanding of certain sections of this Act.

The following notes, therefore, are submitted for the information and guidance particularly of those members of the profession whose patients include injured workers entitled to compensation under the *Workers' Compensation Act, 1926-29*.

In the first place the Act makes no alteration in the legal relation of medical attendant and patient. So far as the medical attendant is concerned it is immaterial that the patient is an injured worker entitled to compensation. The medical attendant must look to his patient or other person liable in the ordinary way and, where it is necessary to take steps to recover fees in a court of law, he sues in the District Court or Small Debts Court. An arrangement, however, was made on October 4, 1927, between certain insurers licensed under the Act and the New South Wales Branch of the British Medical Association whereby, where the medical attendant chooses to look to the insurer for payment of his fees and charges, the insurer will pay him directly subject to his fees and charges being in accordance with the schedule (Schedule "D") drawn up for the purpose.

Some insurers who are not parties to this arrangement are, however, paying the medical attendant directly, providing his fees and charges are in accordance with Schedule "D."

It should be noted that Schedule "D" does not create any onus to pay the fees set out, but regulates the fees payable in cases where the employer is liable under the Act in respect of the medical treatment of the injured worker.

If the medical attendant agrees to look to the insurer for payment it must be granted that the insurer has the right to expect details of the account. This matter is dealt with more fully when discussing Section 10, 4 (a) of the *Workers' Compensation Act*.

The sections of the Act of most interest to medical practitioners are as follows:

Definitions.

Section 6:

... "Employer" also includes any government department heretofore or hereafter created or any minister, trust, commission, or board exercising executive or administrative functions on behalf of the Government of the State, as for example the Railway Commissioners for New South Wales, the Sydney Harbour Trust, the

Metropolitan Water, Sewerage and Drainage Board, the Water Conservation and Irrigation Commission, the Board of Fire Commissioners of New South Wales, the Metropolitan Meat Industry Board, or the Hunter District Board of Water Supply and Sewerage.

Commonwealth departments, for example, Postal Department, are not employers within the meaning of the Act.

Transport Trust.

Every employee (for example, tramway employee) of a transport trust constituted under the *Transport Act, 1930*, is entitled to claim compensation and cost of treatment for injuries received under the *Workers' Compensation Act, 1926-29*. If the employee claims under this Act, then the trust is liable in respect of the medical treatment of the injured worker. But, if he so desires, the injured employee may elect to claim under the *Transport Act, 1930*, Section 124 of which reads as follows:

Where any officer receives personal injury arising out of and in the course of his employment he shall, except where the injury was caused by his own gross negligence or wilful and wrongful act, be entitled during the period of his partial or total disablement arising from the injury to receive, unless and until he is retired or retires from the service of the trust, the salary he was receiving at the date of the injury.

Any question arising under this section may be determined by the *Workers' Compensation Commission* upon application thereto in manner prescribed by rules of that Commission.

No allowance is made for medical, hospital or other incidental expenses.

If the injured employee elects to come under the above he cannot also claim under the *Workers' Compensation Act, Section 47 (1)* of which reads as follows:

This Act shall apply to workers employed by or under the Crown or any Government department to whom this Act would apply if the employer were a private person; but any such worker shall not, save to the extent indicated in subsection two of this section, be entitled to receive compensation or benefits under this Act as well as benefits under any other Act.

Railway Employees.

Section 100 B of the *Railway and Tramways Act, 1912*, no longer applies and all injured employees of the Railway Commissioners of New South Wales, who are entitled to compensation and cost of treatment for personal injury arising out of and in the course of employment, now claim under the *Workers' Compensation Act, 1926-29*.

The Railway Commissioners are self insurers and will pay the medical attendant of an injured employee entitled to compensation and cost of treatment direct, subject to his charges being in accordance with Schedule "D."

... "Injury" means personal injury arising out of and in the course of the employment and includes a disease so arising whether of sudden onset or of such a nature as to be contracted by gradual process other than a disease caused by silica dust; ...

The injured worker, therefore, has to show that the injury arose out of and in the course of his employment. The phrase "arising out of and in the course of the employment" has been the cause of much legal argument, for the most part of no great medical interest.

Compensation for diseases caused by silica dust is provided for in the *Workers' Compensation (Silicosis) Act, 1920-26*.

... "Worker" means ... but does not include (a) any person whose remuneration exceeds five hundred and fifty pounds per year; ...

In the 1926-27 Act this clause excluded any person employed otherwise than by way of manual labour whose income exceeded seven hundred and fifty pounds *per annum*.

It is thought that an assistant to a medical practitioner is a worker within the meaning of the Act if his total income does not exceed five hundred and fifty pounds per year.

¹The information contained herein has been supplied on request by the Honorary Medical Secretary of the New South Wales Branch of the British Medical Association.

Compensation.**Section 7.**

- (1) A worker who has received an injury whether at or away from his place of employment (and in the case of the death of the worker, his dependants) shall receive compensation from his employer in accordance with this Act. . .

Subsection (1) of the 1926-27 Act was omitted and the above subsection, which contains no reference to injuries sustained in the daily or other periodic journey substituted in the 1929 Amendment Act. This section provides that the injured worker shall receive compensation in accordance with the Act from the employer.

Section 18 (Insurance) provides for the employer to be indemnified by the insurer and gives the worker the double assurance that the insurer shall, as well as the employer, be directly liable to any worker insured under the policy.

Section 18 (3) states:

Every such policy shall provide that the insurer shall as well as the employer be directly liable to any worker insured under such policy and in the event of his death, to his dependants, to pay the compensation for which an employer is liable, and that the insurer shall be bound by and subject to any order, decision, or award made against the employer of such worker under the provisions of this Act.

The Regulations, however, in prescribing the Employers' Liability Policy, deprive the employer of the power to compensate the worker by inserting a condition in the policy which prevents the employer from making any admissions of liability without the written authority of the insurer.

Regulations: Division 1.**Appendix. Workers' Compensation Act, 1926-29.****Employer's Indemnity Policy.
Conditions.**

. . . Employer not to make admissions.

3. The employer shall not, without the written authority of the insurer, incur any expense of litigation, or make any payment, settlement, or admission of liability in respect of any injury to or claim made by any worker.

It has already been laid down that the insurer does not insure the worker personally. The insurance policy is a contract to accept the employer's liability under the Act.

- 3 (a). The employer shall not be liable under this Act in respect of any injury which does not disable a worker for a period of at least seven days from earning full wages at the work at which he was employed. But if he is disabled for that period, the compensation shall date from his receiving the injury.

The period of disablement has been extended from three days (1926-27 Act) to seven days (1929 Amendment Act), that is, seven days of physical disablement, irrespective of whether work is available on any one of those days.

If the worker is disabled for less than the statutory seven days, the employer (insurer) is not liable for compensation or cost of treatment.

Section 8. Compensation Payments—where death results from injury.

In the event of the death of the worker as the result of an injury arising out of and in the course of the employment a monetary compensation is allowed the dependants, but no provision is made for any medical expenses. The medical attendant of the deceased must, therefore, look for payment in such cases to the dependants or the deceased worker's estate.

Medical and Hospital Treatment.**Section 10.**

The 1926-27 Act was amended by omitting the whole of Section 10 and inserting in lieu thereof the following section:

10. (1) Where an injury is received by a worker and medical or hospital treatment or ambulance service thereby becomes necessary the employer shall, subject

to this section and to the extent therein prescribed, be liable to pay in addition to any compensation otherwise provided the cost of such treatment or service as may be reasonably necessary, having regard to the injury received by the worker.

- (2) For the purposes of this section—

"Ambulance service" includes any conveyance of an injured worker to a medical practitioner or to a hospital.

"Medical treatment" includes—

- (a) treatment by a legally qualified medical practitioner, a registered dentist, or a masseur; and
- (b) the provision of skiagrams, crutches and artificial members; and
- (c) any nursing, medicines, medical or surgical supplies or curative apparatus, supplied or provided for him otherwise than as a patient at a hospital.

"Hospital treatment" means treatment at any hospital and includes the maintenance of the worker as a patient at the hospital and the provision or supply by the hospital of nursing attendance, medicines, medical or surgical supplies or other curative apparatus and any other ancillary service.

"Hospital" includes infirmary.

- (3) (a) The sum for which an employer shall be liable in respect of the hospital treatment of any worker as an in-patient shall be the cost to the hospital of the hospital treatment, calculated at a rate not exceeding three guineas per week.

(b) The sum for which an employer shall be liable in respect of the hospital treatment of any worker as an out-patient shall be calculated at a rate of three shillings per treatment, but not exceeding one guinea per week.

(c) The maximum sum for which an employer shall be liable for hospital treatment afforded to a worker in respect of the same injury (whether such treatment is afforded at different stages of the injury or not) shall be twenty-five pounds.

(d) The treasurer of a hospital or the officer thereunto authorized in writing by the governing body of the hospital, or, in the case of a private hospital, the manager, may recover from the employer any sum for which the employer becomes liable in respect of hospital treatment under this subsection.

(4) (a) The sum for which an employer shall be liable in respect of the medical treatment of a worker shall be such sum as is reasonably appropriate to the treatment afforded, having regard to the reasonable necessity for such treatment and the customary charge made in the community for such treatment to persons other than workers.

(b) The maximum sum for which an employer shall be liable for medical treatment afforded to a worker in respect of the same injury (whether such treatment is afforded at different stages of the injury or not) shall be twenty-five pounds.

(5) The maximum sum for which an employer shall be liable for ambulance service rendered to a worker shall be two guineas unless the Commission allow a further sum on account of the distance travelled in any particular case.

(6) (a) Where a worker receives medical treatment or hospital treatment or ambulance service in respect of an injury he shall without undue delay notify the employer in the manner prescribed that he has received such treatment and furnish him with reasonable particulars of the treatment or service.

(b) Where a worker receives medical treatment for an injury his employer shall be entitled to cause an examination of the worker to be conducted in consultation with the person who afforded such medical treatment by a legally qualified medical practitioner selected by the employer.

(7) The fact that a worker is a subscriber to a public hospital and is entitled to credit for the amount of his subscription against any charge of the hospital for relief afforded him, or that he is a contributor to an industrial contribution scheme for hospital or ambulance transport purposes and is entitled by reason thereof to treatment at a public hospital or to ambulance transport either at some special rate or fee, shall not affect the liability of an employer under this section.

This section, being concerned with the liability of the employer for medical and hospital treatment, is therefore of particular interest to medical practitioners.

Subsection 2 (Hospital Treatment).—At the present moment certain insurers are contending that hospital treatment, as defined in the Act, includes medical treatment and that, therefore, the employer is not liable for the medical treatment of an injured worker in hospital, either public or private.

It is thought that this is not so, excepting where the injured worker is admitted into the public portion of a public hospital. In such a case the hospital does provide medical treatment and the medical attendant would not be able to recover his fees in a court of law. There is, therefore, no cost to the injured worker and the employer is accordingly not liable.

Where, however, the injured worker is admitted into the paying portion of a public hospital or a private hospital, medical treatment is not provided by the hospital and the patient makes his own arrangements with his medical attendant to whom he is liable for payment. In such a case it is contended that the employer is liable in accordance with Subsection 4 (a) for medical treatment.

A decision on this point by the Workers' Compensation Commission is necessary.

Although under the 1929 *Public Hospitals Act* a medical practitioner may, under certain circumstances, charge a patient who is in a public hospital, the employer is not liable for such treatment if the contention of the insurers is correct that hospital treatment includes medical treatment.

Subsection 3 (a) (Cost of Hospital Treatment not to Exceed Three Guineas).—In the 1926-27 Act, Section 10, Subsection 5 required that the fees and charges for the treatment (that is, medical, surgical and hospital) shall be limited to such charges as prevail in the same community for similar treatment of injured persons.

In the case of the Treasurer, Newcastle Hospital v. Government Dockyard and others, the hospital sought to recover from three employers the cost of hospital treatment provided for injured workers and claimed ten and sixpence per day in respect of a worker patient, such worker having received treatment as an in-patient.

It was held that:

(a) The cost of public hospital treatment which may be recovered under Section 10, is to be ascertained by reading Subsections (5) and (7) of that Section together. The limitation contained in Subsection (5) was to ensure that the cost of treatment to an employer should not be in excess of the prevailing charges in the same community for similar treatment of injured persons other than workers.

(b) "Community" for the purposes of Subsection (5) must be regarded as the industrial community of the State. The fees sought to be recovered should be limited to those charges prevailing in the industrial community for similar treatment of injured persons by other public hospitals.

The Commission found such prevailing charges for the treatment of in-patients was three guineas per week.

Subsection 3 (c) (Maximum Sum: Hospital Treatment), Subsection 4 (b) (Maximum Sum: Medical Treatment).—In the 1926-27 Act the amount allowed for hospital and medical treatment was fifty pounds unless the Commission otherwise directed. Consequently on the 1929 Amendment Act a maximum sum of twenty-five pounds is now allowed

for each form of treatment, that is, hospital and medical, and there is no question of the Commission directing otherwise.

Subsection 4 (a) (Cost of Medical Treatment).—Some practitioners fail to appreciate the significance of this subsection and, as a result, disputes with insurers frequently arise. If the medical attendant looks to his patient for payment, he is entitled to his fees for attendance and, if necessary, can recover in a court of law.

It does not follow, however, that because the medical attendant has been able to recover his fees in the District Court or Small Debts Court, the employer is liable under the *Workers' Compensation Act* for a similar amount as cost of treatment to the injured worker.

When, however, the practitioner looks to the insurer for payment he has to consider whether his charges are the customary charges made in the community (that is, industrial community, *vide supra*) for such treatment to persons other than workers. That is to say, what would be a reasonable fee to charge a member of the industrial community who is not an injured worker entitled to compensation.

Take the following examples:

(1) A practitioner attends, daily for six weeks, an injured worker in hospital for a synovitis of the knee (the worker returning to work on discharge from hospital), and in his account to the insurer charges for every visit according to Schedule "D."

The practitioner may have had very good reasons for his frequent visits, but the charges, as stated, are not the customary charges made in the community for similar treatment to persons other than workers.

(2) A practitioner attends an injured worker three times daily for four consecutive days for a septic finger (the worker returning to work on the fifth day) and in his account to the insurer charges for every visit.

Such a charge would not be the customary charge *et cetera* and the insurer is entitled to dispute the account.

A consultant, attending an injured worker, unless at the express wish of the employer (insurer), should look to his patient for payment and not to the insurer.

Unfortunately, insurers, in communicating with medical practitioners in regard to their charges, sometimes state that, in their opinion, the number of visits was excessive or unnecessary. This is naturally resented by the practitioner concerned, especially as the insurer frequently has little or no evidence on which to base his opinion. The attending practitioner is really the only person who can say whether the visits were necessary. The insurer, however, is entitled to dispute the account under this section and an explanation is due to him.

As far as Schedule "D" is concerned the disputes with insurers occur usually in cases where the charge is made for each and every attendance, for example, septic finger. In all such cases the medical attendant, if he looks to the insurer for payment, must consider what is the customary charge for such treatment and adjust his fees accordingly.

In Canada and the United States maximum fee schedules are prescribed by the commissions. The following rules are taken from the *Workers' Compensation Act* of Manitoba (Canada) as typical of the rules in North America regarding medical expenses:

A patient is not allowed to have more than one medical man in attendance at the same time unless special authorisation from the board is first obtained.

A patient is only entitled to reasonable and necessary medical care. If he would not require a daily visit from the doctor if *paying the bill himself* [the italics are the writer's] he should not expect nor call for daily attention when the bills are paid by the board. All unnecessary expense should be avoided.

It should be noted that the employer is not liable for any medical expenses after the injured worker has returned to work, even though the worker may not have completely recovered from the effects of the injury.

Insurers frequently complain that no notes, or often only scanty ones, on the condition of the injured worker are received from the medical attendants.

There would undoubtedly be less friction if medical practitioners communicated with the insurers at once when treatment is likely to be prolonged or when complications arise.

In regard to certificates, accuracy in every detail is absolutely necessary. Hazardous statements that the injury was the result of a certain event should be avoided.

The Editor of THE MEDICAL JOURNAL OF AUSTRALIA on May 17 this year, in a leading article, drew attention to the undesirable practice of post-dating certificates.

Some practitioners, however, still post-date certificates, and their attention is again directed to the warning notice of the General Medical Council of Great Britain:

Any registered practitioner who shall be shown to have signed or given under his name and authority any such certificate, notification, report or document of a kindred character which is untrue, misleading or improper, whether relating to the several matters above specified or otherwise, is likely to have his name erased from the Register.

The New South Wales Branch of the British Medical Association recently issued the following memorandum to its members:

Misleading Certificates.

Where a certificate given in connection with a claim for compensation by an injured worker is based on personal examination of the claimant, the certificate should not only bear the date of giving it, but should state and indicate the date of the examination. Where it is not based on personal examination but on information otherwise obtained, the source of information should be stated.

In supplying clinical notes to the insurer the medical attendant should remember that the insurer usually has his own medical adviser and should, therefore, express himself in correct technical terms. While these are unintelligible to a layman, they are of the utmost importance to a medical adviser.

Subsection 6 (a) (Notice of Medical Treatment).—The onus is on the injured worker to notify the employer without undue delay that he has received medical treatment.

The injured worker has the right to choose his own medical attendant and is not compelled to receive treatment from a practitioner provided by the employer. The employer (insurer), however, is entitled to reasonable particulars of the treatment or service.

Subsection 6 (b).—This subsection gives the employer the right to have the injured worker examined by a practitioner of his (the employer's) choice in consultation with the injured worker's own medical attendant in respect of treatment. The employer's practitioner, usually the medical adviser of the insurer, should not, however, undertake the immediate treatment of the worker patient except with the consent of the medical attendant previously obtained.

Medical Provisions.

Section 50 (Medical Referees).

(1) The Commission may appoint legally qualified medical practitioners to be medical referees for the purposes of this Act and the remuneration of, and other expenses incurred by, such medical referees shall, subject to rules made under this part, be paid by the Commission out of the fund.

(2) Where a medical referee has been employed as a medical practitioner in connection with any case by or on behalf of an employer or worker, or by any insurer interested, he shall not act as medical referee in that case.

Section 51 (Medical Inspection).

(1) Where a worker has given notice of an injury he shall, if so required by the employer, submit him-

self to examination by a legally qualified medical practitioner, provided and paid by the employer, and if he refuses to submit himself to such examination, or in any way obstructs the same, his right to compensation, and to take or prosecute any proceedings under this Act relating to compensation, shall be suspended until such examination has taken place.

(2) Any worker receiving weekly payments under this Act shall, if so required by the employer, from time to time submit himself to examination by a legally qualified medical practitioner, provided and paid by the employer. If the worker refuses to submit himself to examination or in any way obstructs the same, his right to such weekly payments shall be suspended until such examination has taken place.

(3) A worker shall not be required to submit himself for examination by a medical practitioner as herein provided otherwise than in accordance with rules made by the Commission or at more frequent intervals than may be prescribed by such rules.

The medical practitioner provided by the employer is usually the medical adviser of the insurer.

Rules: Medical Provisions.

(1) Where a worker has given notice of an injury or is in receipt of weekly payments under the Act, he shall not be required to submit himself against his will for examination by a medical practitioner provided by the employer except at reasonable hours.

(2) A worker in receipt of weekly payments shall not be required, after a period of one month has elapsed from the date on which the first payment of compensation was made, or if the first payment is made in obedience to an award of the Commission from the date of the award, to submit himself against his will for examination by a medical practitioner provided by the employer except at the following intervals: Once a week during the second and once a month during the third, fourth, fifth and sixth months after the date of the first payment or the award, as the case may be, and thereafter once in every two months.

Provided that where after the second month an application has been made to the Commission for a review of the weekly payment, the worker may be required pending and for the purposes of the settlement of the application to submit himself for one additional examination.

Obituary.

JOHN LESLIE ROSS SODEN.

DR. JOHN LESLIE ROSS SODEN, the eldest son of the late John and Mrs. Ross Soden, of "Grong Grong," Toorak, was born at Kyneton, Victoria, on November 1, 1882. He was educated privately and at Queen's College, St. Kilda. He commenced his medical course at the University of Melbourne in 1907. The following year he went into residence in Trinity College. He graduated in 1913. While in Trinity College he took an active part in college life. He rowed "five" in the college crew in 1911 and 1912 and was honorary secretary of the Social Club in 1912. Subsequent to graduation he was a member of the resident staff of the Women's Hospital; later, that of the Victorian Eye and Ear Hospital. Volunteering for service in 1914, he was first posted to Number 5 Australian General Hospital with the rank of Captain. In February, 1916, he sailed for Egypt as Senior Medical Officer of His Majesty's Australian Troopship *Themistocles*. He returned on transport duty and was sent to Broadmeadows Camp, where he remained until August, 1916, when he left for England on the *Orontes*. He was first posted to the Eighth Training Battalion at Codford, in October. In June, 1917, he went to Grantham where he acted as Medical Officer to the Australian Flying Corps. In November, 1917, he was

posted to the Eleventh Field Ambulance and in December was attached as Regimental Medical Officer to the Forty-third Battalion, with which he served in France and Belgium until evacuated as a casualty in June of the following year. After convalescence he was appointed to the medical staff at Hurdcott, where he remained until the Armistice.

Subsequently he did post-graduate work on skin diseases in London and returned to Australia in November, 1919. He married Dr. Margaret Robertson in February, 1920, and practised for two years in Fitzroy, but had to relinquish practice on account of ill health. In 1923 he completed the course for the Diploma of Public Health at the University of Melbourne.

After his retirement from practice he devoted himself to his hobbies which were photography, wireless, carpentry, music and art. In 1928 he visited Ceylon and in 1930 took a trip to Europe. While on this trip he had a recurrence of his ill health and shortly after his return he died at his home, Elmhurst, Church Street, Middle Brighton, on December 7, 1930.

Dr. George Cole writes:

I first met John Ross Soden at Trinity. An older man than the average undergraduate, he began his course with a mind already broadened by foreign travel and a wide range of reading. His maturity of outlook was reflected in a staidness of demeanour and a reserve which concealed a genial personality. One could not long be associated with him without finding him a good companion and a staunch friend; this I believe was the experience of all who knew him well, whether in civil or in military life.

As a student he was methodical to a degree; this quality was exhibited also in his hobbies—photography, cabinet work, and later, wireless—in all of which he showed a considerable degree of technical skill. While not brilliant, he was endowed with that instinctive grasp of essentials which is the foundation of all scholarship; he was apt to be impatient of "frill," academic or otherwise.

Graduation was followed by hospital work in special subjects, and then his plans for as wide a preparation as possible for practice were interrupted. He volunteered for active service early in the war. Much to his disgust, after several months of duty in Australia he reached Egypt only to be returned at once on transport duty. He saw service in France and Belgium as a regimental medical officer at a period when life in the field was at its most strenuous. After demobilization he undertook some post-graduate work in London and then entered private practice, but before long he had to relinquish this on account of ill health. How severely his health had suffered was not realized even by close friends until his last illness.

He had a keen appreciation of the value of quality; while on appropriate occasions he could enjoy to the full the good things of life, his own tastes were simple. As a student he enjoyed camping out in rather a Spartan manner. After his retirement his home and his hobbies occupied his time, but he never lost interest in his profession. This is shown by his undertaking the course for the Diploma of Public Health.

It is hard to estimate how far any individual is likely to have fulfilled in later years the promise of his youth, but I have always felt that John Ross Soden, had his health permitted him to engage actively in practice, would have won for himself a high place in his profession; not perhaps among the ranks of the specialists, but as a general practitioner, for besides sound knowledge, he possessed that essential attribute of the family doctor, that kindness of manner that invokes the patient's confidence. This showed itself not only in the normal conditions of civilian practice, but under the disadvantageous surroundings of military "sick parades." He was, it is almost superfluous to add, a very good friend with whom to discuss one's doubts and difficulties under any circumstances.

FRANK WALKER RAYSMITH.

JUNIOR graduates of the University of Sydney will regret to hear of the death of Frank Walker Raysmith. He was educated at Newcastle High School. Immediately after

leaving school he enlisted and saw active service with the Australian Imperial Force from 1915 to 1919. In 1920 he entered the University of Sydney, where he proved very popular amongst his fellow students and represented them in 1923 on the Undergraduates' Committee. He took a keen interest in all sports, especially football, and toured New Zealand in 1922 with the Rugby Union team. His studies were interrupted in 1925 through sickness, but he went to Edinburgh in 1928, where he graduated.

On the journey out from England to Australia he became very ill and it was found necessary to land him in New York, where he was admitted to the New York General Hospital. An X ray examination there revealed a fairly advanced unilateral pulmonary tuberculous lesion. Artificial pneumothorax on the left side was performed.

Later he returned to Sydney and practised at Wollongong and Berrima. Then he accepted the position of Medical Officer at Fanning Island where his untimely end took place about two months ago from an exacerbation of pulmonary disease. He leaves a wife and child.

GEOFFREY FREDERICK TRAVERS.

WE regret to announce the death of Dr. Geoffrey Frederick Travers, which occurred at Brighton, Victoria, on February 1, 1931.

Correspondence.

THE WAR AND SIR NEVILLE HOWSE'S PART THEREIN.

SIR: In Number 5, Volume I, eighteenth year, Lieutenant-Colonel Springthorpe blames Howse for all the ills. Does he think Howse was the Almighty?

Howse was only an assistant director of medical services, very small beer when a director of medical services or even a deputy director of medical services is around, and there were many between Anzac and even Lemnos, let alone Egypt. I was an assistant director of medical services myself and know. Colonel Springthorpe evidently does not understand anything about the lines of communication or bases.

Howse did wonderful things to the limit of his power. I served under him at Anzac and in France and he had wonderful control over the units under him.

If Howse had been Director-General of Medical Services, British Empire, and Commander-in-Chief, he might have done part of what Colonel Springthorpe expected.

Yours, etc.,

A. H. MOSELEY,
Colonel (retired),
A.A.M.C.

8, Nelson Street,
Woollahra,
January 30, 1931.

SIR: Lieutenant-Colonel Springthorpe's letter (THE MEDICAL JOURNAL OF AUSTRALIA, January 31, 1931), in which he freely criticizes Sir Neville Howse's administration, calls for comment.

Anyone who has read the accounts of the Dardanelles campaign, knows that the whole operation was attempted with insufficient men, munitions and material, medical and otherwise. After the event it is easy to say what should have been done, but everyone knows that had the facilities been more, efficiency would have been increased.

The charges brought against General Howse are that he should have remained at home, that he "knifed" anyone criticizing him, and he was "far from one of the best directors of medical services in the war."

Colonel Springthorpe states that the A.I.F. medical services would have been better developed if General Williams or General Howse had remained at home to organize the administration. If Colonel Springthorpe thinks that bad management is less deleterious at the base than at the front, few military men will agree with him. If he thinks that General Howse was not a bad administrator, his criticism of him is unnecessary.

To the charge that General Howse "knifed" anyone criticizing him, the reply is that criticism is not part of the duties of a medical or other officer in time of war, and to loyally support superior officers is one of the first duties of all military men. Did Colonel Springthorpe always perform this duty?

To the third charge that he "was far from one of the best directors of medical services in the war" I can only say that I came in contact with two directors of medical services of the R.A.M.C. and that General Howse was infinitely superior to either. It is not fair to judge a service from individual examples, but I had opportunity to compare the work of the R.A.M.C. and of the A.A.M.C. in Gallipoli and in Egypt, and I consider that the staff work of the A.A.M.C. compared favourably with that of its colleague, the R.A.M.C. I am sure that many other officers will agree with me.

Finally, I was not on the staff of General Howse, nor did I come in personal contact with him, but I know from experience that if a senior officer appealed to him, General Howse would give his fullest support to any feasible scheme for the benefit of the sick and wounded.

Yours, etc.,

JOHN K. ADEY,
Ex-Lieutenant-Colonel,
A.A.M.C., A.I.F.

Sunbury, Victoria,
February 1, 1931.

SIR: The letter of Lieutenant-Colonel Springthorpe published in your issue of January 31, 1931, under the above heading calls for immediate reply. To those who possess a knowledge of the facts and can assess the statements of Lieutenant-Colonel Springthorpe at their true value, it would at first sight seem that such a collection of garbled inaccuracy is not worthy of notice. But it challenges the memory of a very gallant and distinguished soldier and gentleman. Therefore, a desire for fair play and historical accuracy demands that the statements made by the writer be critically examined. Let us take the events, as does Lieutenant-Colonel Springthorpe, "in their sequence."

1. He states: "The evolution of our A.A.M.C. was poor and the mobilization of our A.I.F. unsatisfactory, both administratively and preventively," and suggests that either Williams or Howse should have remained behind and given Australia the benefit of their experience. With the writer's reference to Surgeon-General Williams, who was at the time Director General of the Australian Army Medical Services, we are not concerned. The writer is assailing Howse for going on active service and blames him for the condition of the A.A.M.C. and the faulty mobilization of the A.I.F. Howse was in no way responsible for the A.A.M.C. Since the South African War he had been a Captain on the Reserve and in practice in Orange, New South Wales. On the outbreak of war (*vide* page 783, Volume I, of the Medical History) he was invited by the Commandant, Second Military District, to go on active service. He accepted at once, sailing for New Guinea, as P.M.O. of the Australian Naval and Military Expedition on August 18, 1914. He returned to Australia barely in time to embark (page 33) with the First Division, A.I.F. Therefore, he had nothing whatever to do with the organizing, raising, equipping or training of the A.A.M.C., A.I.F., up to the time of embarkation, nor with its "evolution," nor had Howse anything to do with the "mobilization of the A.I.F." In any case, on the outbreak of war, the A.A.M.C. in Australia was in a high state of efficiency, as it had been organized and directed by Surgeon-General Williams. In New South Wales it had had the advantage of command by Colonel T. Flaschi, one of the ablest and most con-

scientious officers in the corps. Here its efficiency was undoubted. Had Howse remained in Australia, the A.I.F. would have lost the services of an officer who, as the Official History shows, played a great part in its history.

2. The writer states that Howse shared with Williams medical responsibility on the first convoy. He declares that "Butler's account of the medical happenings can scarcely be said to be to the credit of either." Again, let us look at the facts:

(i) This was one of the greatest convoy undertakings in history. There were 28 Australian transports conveying 20,758 troops and 7,479 horses, together with ten New Zealand transports with 8,427 troops and 3,815 horses. They were at sea for several weeks.

(ii) Admiralty regulations were followed, but at a higher standard.

(iii) The D.G.M.S., General Williams, detailed the P.M.O. in each district as responsible for the fitting and medical equipment of the transports. In each case officers were specially detailed for this work.

(iv) Drugs and dressings were provided on a scale greatly in excess of Admiralty requirements.

(v) Red Cross stores were provided on a very liberal scale.

Butler's summary on the health on the voyage (page 39) shows that there were six deaths, all from pneumonia, four being secondary to measles and influenza. At Colombo it was reported that 1,154 patients had been treated in hospital since leaving Albany. There were then in hospital 67 venereal disease, 62 measles, 55 influenza, 21 pneumonia or pleurisy, 14 tonsillitis, 13 diarrhoea, 8 rheumatism, the remainder being various common ailments. "At the end of the voyage the health of the troops was good, but a large number of cases of measles awaited disposal." Surely this is a splendid record for the transport of 30,000 troops on a long sea voyage across the equator. A fair-minded observer would, one thinks, apportion praise rather than blame to those responsible for such a brilliant feat of sea transport. Apart from this, Howse put the time of the voyage to the best advantage, as Butler relates on page 41-42.

3. In paragraph 3 Lieutenant-Colonel Springthorpe condemns unsparingly the work of Howse in Egypt, and lays at his door the blame of everything that offended the writer's eye. I cannot speak from personal knowledge of this part of the campaign, but I feel confident that it will be covered by other correspondents. May I, however, quote the words of our most able and distinguished General Staff Officer, Major-General Sir Brudenell White (Melbourne *Argus*, October 4, 1930), who writes:

In the Red Sea the *Orvieta* was "hauled to" by H.M.S. *Hampshire*, the ship which carried to his watery grave the greatest British soldier of modern times. The message she gave us was from the Secretary of State for War, and it was brief and decisive. The A.I.F. was not to proceed to England, but was to disembark at Alexandria and to go to the desert about the pyramids. Twenty-five thousand men prepared for and anticipating one set of circumstances had suddenly to recast their plans and their outlook. As Egypt was quite unprepared for such an invasion and had no staff competent to deal with it effectively, it was soon evident that the A.I.F. was to be cast upon its own resources, and medical problems were for the moment paramount. Much talking there was and much hurrying hither and thither after arrival at Port Said; but the arguments and the journeys had achieved little and the brow of General Bridges grew clouded and his sarcasm more bitter. Then it was that the quiet surgeon with the humorous and kindly eyes and the compressed, determined lips stepped into the breach and healed wounds both physical and metaphysical. Almost imperceptibly out of chaos came order; out of nothing grew plans for the establishment of hospitals for the disposal of the sick and for the provision of drugs and comforts. General Bridges' eye grew bright whenever the staff officer A.M.S. came to him. For he came not with problems, but with their solution. Those with whom Howse dealt received him with open arms, for to them he came with healing and with aid.

The keen eye and the human understanding made real wants plain to him, but he ruthlessly exposed the malingerer and the humbug. No praise can be too high for the man who, without established military position and regardless of his personal interests, provided thoroughly for the medical needs of the A.I.F. in Egypt and laid a firm foundation for the establishment of that great medical service than which there was nothing more loyal, efficient, and devoted in the forces of the Empire.

4. As regards Anzac, Lieutenant-Colonel Springthorpe lays on the shoulders of Howse the whole blame for the many medical failures. Tragic reading these make. No one can defend the failure of the medical services in many directions. But Howse was only A.D.M.S., First Australian Division, one unit in many, operating under many higher commands. Perhaps it is only ignorance of military organization and the responsibilities of an A.D.M.S. that makes the writer lay this charge. Let me again quote Sir Brudenell White:

On the voyage and in Egypt Neville Howse had rendered remarkable service. At the landing at Gallipoli he was invaluable and indispensable. Human power of seeing into the future is at best very limited, and the medical provision for the great landing on the Gallipoli Peninsula displayed much of human frailty. The medical orders were not in Howse's possession long before the event, but with characteristic vigour he represented the palpable defects and insufficiencies. That some remedy was applied is entirely due to him. But alas! the event produced the unexpected, as events in war are wont to do, and for a time the beach at Anzac looked a holocaust. Then it was that Howse became a giant. He took the whole matter into his own hands, giving and disregarding orders in a manner quite shocking, but strangely and rapidly productive of results. Shells and bullets he completely disregarded. He never did regard them seriously, but on this occasion his bearing was not only contemptuous but entirely oblivious. To the wounded he was gentleness itself. His capable hands eased many a patient, while his cheery voice and bearing brought comfort and consolation.

In any case, many of the things of which Lieutenant-Colonel Springthorpe complains in paragraph 4 were occurring in Egypt while Howse was on Gallipoli. Historical accuracy demands that this be recorded.

5. The quarrels and strife of Number 1 and Number 2 A.G.H. are matters of history also, and have nothing to do with the case.

The references to the D.M.S., A.I.F., are too nebulous to require any special reference. The difficulties surrounding the appointment and how they were overcome by the persistence and foresight of Colonel Fetherstone are set out by the historian on pages 433-436, while pages 479-486 show the influence Howse exerted in the administration of the service and the general improvements that took place. May I again quote Sir Brudenell White:

Howse in due course became Director of the Medical Services of the A.I.F. That service grew to be famous, because it was composed of a rare set of men to whom duty and self-sacrifice were second nature, and by reason of their marked efficiency. But something is due to their head for the wisdom and breadth of his administration. Mistakes no doubt were made, but mistakes were inevitable; war is not an exact science, and judgement is perforce given upon incomplete data. But, in the main, the Australian Army Medical Service had a wise head, and many and many a young man showing promise, courage and devotion received a helping hand, which took him from the ruck and placed him in the forefront of his profession.

Of Howse the Parliamentary representative and Minister of the Crown some other pen must write. As a soldier he played a notable part in a great struggle with courage, skill and human understanding. He endeared himself to all who had dealings with him, and he has left behind an imperishable record, which is at once a monument and an inspiration. *Vale Howse!*

I trust that in this brief attempt to refute the charges laid against the fame and memory of an old and dear friend and chief, the facts as related will speak for themselves. The people of Australia hold the name of Neville Howse in honour. It would seem a cruel and wanton thing that such charges against the honoured dead should be made by one who served as an officer in the A.A.M.C. Ignorance one might forgive, but a pen directed by motives at which one can only surmise, is an unworthy weapon to wield in attack on one who served bravely, ably and unselfishly to the end of his days.

Yours, etc.,

F. A. MAGUIRE.

193, Macquarie Street,
Sydney.

February 2, 1931.

SIR: As one who was intimately associated with Sir Neville Howse during most of the war, I hope I may be allowed to comment on the surprising letter of Dr. J. W. Springthorpe in your issue of January 31. Even those who know Dr. Springthorpe must have been surprised at this letter which purports to be an indictment of Sir Neville on five tabulated counts—with a promise of more to come later on. Those who do not know Dr. Springthorpe may have been impressed by his innuendoes and for the benefit of these it seems worth while to reply in some detail.

Taking Dr. Springthorpe's headings *seriatim*:

1. "The evolution of our A.A.M.C." and "the mobilization of our A.I.F.": Howse had nothing to do with either. While the A.A.M.C. was being "evolved" he was a busy surgeon at Orange, except for his service in South Africa, where he won the V.C. During mobilization of the A.I.F. he was away at New Guinea with the Expeditionary Force which occupied Rabaul.

2. "Medical responsibility on the first convoy": All the arrangements for personnel and equipment of the transports were made while Howse was in New Guinea. He had nothing to do with them. He returned from New Guinea only just in time to go as an "unattached" officer and had no official position until after arrival in Egypt. Clearly he cannot be held responsible for any shortcomings at that stage.

3. At Mena Camp Howse became A.D.M.S. of the First Division and at once made his influence felt. But he could not achieve the impossible. Dr. Springthorpe knows as well as anyone how it was well nigh impossible at that stage to get any alteration in the arrangements, medical and otherwise, already made by the Imperial authorities, who, of course, controlled the whole situation. Although Australia was to pay the piper, it was they who called the tune. Dr. Springthorpe himself makes damning allusions to the inefficiency of many of the senior R.A.M.C. officers who were directing affairs. The alleged "under-feeding and overtraining" of the troops will hardly be admitted by anyone who saw them scaling the hills at Anzac on April 25.

4. In regard to the alleged "medical failure" at Anzac, even Dr. Springthorpe finds it difficult to make Howse responsible. And rightly so. Howse was then A.D.M.S., First Australian Division, and his control was strictly limited to his divisional area. Transport of sick and wounded on the line of communication, that is, by hospital ship *et cetera*, and disposal of them at the base (Egypt, Malta, England) were matters over which he could exercise no influence, and this must be as well known to Dr. Springthorpe as to myself.

5. Half of this indictment appears to refer to matters which occurred before the evacuation, that is, while Howse was still at Gallipoli.

In the other half it is not easy to make out what the charge is. Apparently that in the opinion of Dr. Springthorpe Howse was "neither efficient nor successful" as D.M.S., A.I.F. Let it be noted that this is the opinion of Dr. Springthorpe and leave it at that.

It must have been a very strong sense of duty that moved Dr. Springthorpe to make this attack. Only if he had proved his case up to the hilt could it have been

considered other than indecent. I think I have shown that the "case" presented is no case at all. And I am sure that all those who loved and respected our late chief will join in this protest.

Yours, etc.,

R. J. MILLARD,

(Late Colonel, A.A.M.C.
and D.D.M.S., A.I.F.).

The Coast Hospital,
Sydney,
February 3, 1931.

Post-Graduate Work.

DIPLOMA IN PUBLIC HEALTH.

DR. C. E. COOK has passed the prescribed examination held in December, 1930, for the Diploma in Public Health at the University of Sydney.

Books Received.

RECENT ADVANCES IN FORENSIC MEDICINE, by Sydney Smith, M.D., M.R.C.P., D.P.H., and John Glaister, M.D., D.Sc.; 1931. London: J. and A. Churchill. Post 8vo., pp. 200, with 66 illustrations. Price: 12s. 6d. net.

PUBLIC HEALTH PRACTICE IN THE TROPICS, by J. Balfour Kirk, M.B., Ch.B., D.P.H., D.T.M. and H.; 1931. London: J. and A. Churchill. Demy 8vo., pp. 512, with 80 illustrations. Price: 15s. net.

INFANT FEEDING IN GENERAL PRACTICE, by J. V. C. Braithwaite, M.D., M.R.C.P., with a foreword by H. C. Cameron, M.A., M.D., F.R.C.P.; 1930. Bristol: John Wright and Sons. Crown 8vo., pp. 155. Price: 4s. 6d. net.

ANTE-NATAL CARE INCLUDING THE ABNORMALITIES ASSOCIATED WITH PREGNANCY AND A SECTION ON POST-NATAL CARE, by W. F. T. Haultain, and E. Chalmers Fahmy, with a foreword by R. W. Johnstone; Second Edition; 1931. Edinburgh: E. and S. Livingstone. Crown 8vo., pp. 134. Price: 5s. net.

AN INTRODUCTION TO MEDICAL HISTORY AND CASE TAKING, by Geoffrey Bourne, M.D., F.R.C.P.; 1931. Edinburgh: E. and S. Livingstone. Crown 8vo., pp. 204. Price: 5s. net.

A TEXT-BOOK ON MEDICAL JURISPRUDENCE AND TOXICOLOGY, by John Glaister, M.D., D.P.H., F.R.S.E., and John Glaister, Junior, M.B., Ch.B., M.D., D.Sc.; Fifth Edition; 1931. Edinburgh: E. and S. Livingstone. Demy 8vo., pp. 969, with 132 illustrations and seven plates. Price: 30s. net.

MICROBIOLOGY AND ELEMENTARY PATHOLOGY FOR THE USE OF NURSES, by Charles G. Sinclair, B.S., M.D.; 1931. Philadelphia: F. A. Davis Company. Royal 8vo., pp. 362, with 102 illustrations, some in colour. Price: \$2.50 net.

AN ANTHOGRAPHY OF THE EUCALYPTS, by Russell Grimwade, B.Sc.; 1930. Australia: Angus and Robertson. Imperial 8vo., pp. 114, with 103 plates. Price: 42s. net.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xvi.

REPATRIATION COMMISSION: Resident Medical Officers.

ROYAL ARMY MEDICAL CORPS: Medical Officers.

SYDNEY HOSPITAL, SYDNEY, NEW SOUTH WALES: Non-Resident Medical Officer.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmalm United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company, Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members desiring to accept appointment in ANY COUNTRY HOSPITAL, are advised to submit a copy of their agreement to the Council before signing, in their own interests. Brisbane Associated Friendly Societies' Medical Institute. Mount Isa Hospital. Mount Isa Mines.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.